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July 1998

BOARDWATCH MAGAZINE

Guide to Internet Access and the World Wide Web

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The Official Publication of ISPCON

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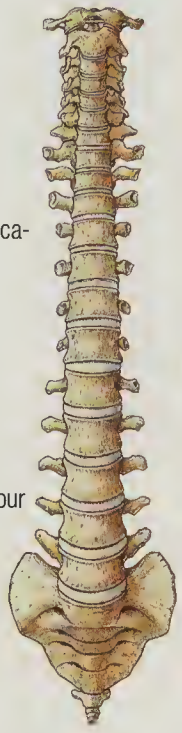

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Mecklermedia

BOARDWATCH MAGAZINE

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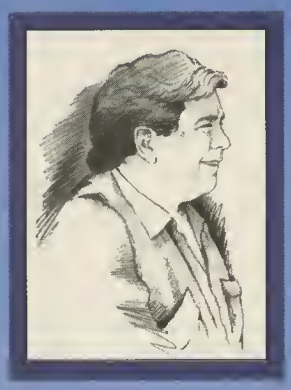

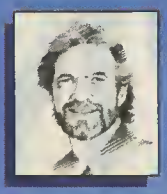

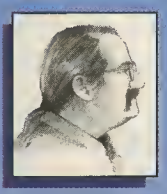

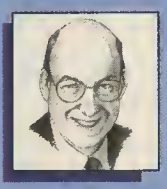

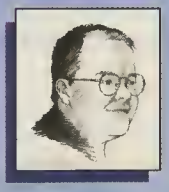

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EDITOR'S NOTES by Jack Rickard

JACK'S BACK

Boardwatch Magazine and our related Internet Service Provider Conventions have presented some interesting problems over the years. At times, I resent having to go home, sleep for a few hours, hose off the carcass, and get back in the chair to do it some more. It's that much fun.

But to do what you want to do in life, you also have to take what comes with. As the magazine, directory, and trade shows have encountered some success, they have also grown. And like everyone in the Internet industry, I've found that dealing with growth and even success is more of a full time job than it would be dealing with failure. It brings up a lot of the "kinds of problems to have." Unfortunately, they're still problems and still have to be worked off.

As the business has grown, so has the detritus of dealing with just the housekeeping of having a business. With 18 employees, if you spend five or ten minutes with each just saying hello and getting up to speed on what they're doing, you've shot the first couple hours of the day. And they have to sit somewhere. We've spent weeks on plans for a new office in Golden, along with all the detritus of moving there. And increasingly, more and more of my day has been devoted to vendor contracts, hotels, convention centers, employee management, financial management, etc. etc. ad nauseum. This tale should find a sympathetic reception among our readership. Many of you face the same difficulty. It is actually possible to grow yourself to death – in some cases literally.

All problems have solutions. Sometimes you have to think outside the box a bit. The basic drill is that I'm spending more and more time doing things I'm not particularly gifted at managing, and less and less time doing what I think I do well and should be doing more of. As a result, I'm writing about a day per month now, and many of the conversations I have with industry insiders are crossing my beam as if from nowhere. I don't know what they are talking about. I didn't know that was going on. I didn't even know that needed to go on. In short, I'm not doing my job, because I'm too busy doing business housekeeping. However badly it might need to get done, it really doesn't add a thing to the value our publication has to our readers, the relevancy of our trade show program, or anything else you all are paying for and deserve to have. This is simple. All of that has to be reversed.

One of the things we've taken a pounding on recently was for International shows. We tend to be a bit U.S. centric – covering U.S. Internet Service Providers. But the Internet is intrinsically global. There are six or seven hundred ISPs in the U.K. now, probably 600 plus in Brazil. Australia is extremely well networked with hundreds of Internet Service Providers. And we do hear from them. When are we bringing an ISPCON to Europe? To South America? To Australia? The latest was from India. They have precisely ONE ISP - officially. But a group in India wants us to come do an ISPCON there. And they make a good case. Deregulation is indeed coming to India and in fact, there probably will be a couple hundred access providers in India a year from now. And I have known for several years that indeed they have had a number of successful ISPs in fact in India for some time – albeit not officially.

Looking through our office of 18 people, really a crack team that will probably generate some $12-$13 million in revenues in Calendar 1998, I don't see any slack. They're doing about what can be done by eighteen people in between showers. So we need more people. Like 35 or 40. Experienced people. We don't even have time to stop and interview that many people, much less hire and train them.

If you can't build, buy. The closest thing we could find to a crack team of people experienced at doing Internet trade shows and publications is Mecklermedia. They do 30 Internet World trade shows in 25 countries and a weekly *Internet World* magazine. They have 160 people. People who are already there, and already pretty good at what they do. I felt like the ostensibly crippled Packled ship on Star Trek NG facing the Enterprise. They're smart. They can make us go. We look for things.

Mecklermedia, a publicly traded company, (NASDAQ: MECK) is doing pretty well with their trade shows and most notably overseas. They do 30 of them in 25 countries in a mix of wholly owned shows and partnerships that would take years to duplicate. Because of the partnerships, and some curious SEC reporting rules, they're badly undervalued on the results of the overseas shows. And the shows run fairly flawlessly – they have the logistics down to an art form. Their internet.com web site is emerging as one of the most read industry sites on the web and probably one of the most undervalued Internet site properties in the game – generating substantial ad revenues putting it far in the black beyond some of the sites causing all the hysteria on Wall Street – with a much more desirable business readership. And their stock price was bumping around between $20 and $26 per share. Unfortunately for me, there WAS one other guy with the same eye on the same plum. Alan

Meckler, Chairman of the company, and holding some 32% of the stock, sees it about the same way – though we may be the only two on the planet so convinced. Two's a party.

So we sold ***Boardwatch***/ISPCON to Meckler in a $29.5 million cash/stock package deal. We are now Mecklermedia's Golden Colorado location and ***Boardwatch Magazine***, the ***Directory of Internet Service Providers***, and ***ISPCON*** east and west are now Meckler properties in a deal closing May 15, 1998. And I'm now a fairly significant shareholder in Mecklermedia.

I have been a little mystified by the reaction. It seems everyone expects me to go on vacation in the Caymans at this point. A touch of reality here. That wasn't the mission. After a few meetings with Alan Meckler, Chris Cardell, the chief operating officer, and Carl Pugh, the vice president of Trade Shows whom I'm actually known casually for several years, it became apparent that the synergies between the two companies were enormous. ***Boardwatch*** will continue to be published from our new Golden, Colorado, facility. ISPCON Fall '98, scheduled for September 28 to October 1 has over 500 ISPs registered already as of the end of May with a little over half of all exhibit space sold out already. New show sponsors include Sun Microsystems, Intel, and Hewlett Packard with 3com returning as sponsor from Baltimore's Spring event. It's going to be bigger, better, and more exciting than any show we've done. And my fondest hope is that we stop abusing attendees and exhibitors with our clownish efforts at registration and exhibitor services by like having Carl Pugh's professional team handle those matters from the get go. And we are already planning ISPCON shows for Internet Service Providers in the UK (probably October – yes THIS year) and Australia (looks like spring '99). So two weeks post merger, it looks like it is not only working, but smoking.

I personally have no interest in the Caymans. Vacations are for the weak minded that never did find anything to do with their life. Usually a nap will do. And as it so happens, I was already living about as well as I wanted to here in Colorado. The Internet industry has never been so exciting with new infrastructure players such as Joe Nacchio and Qwest Communications, James Crowe and L3 Communications, the newly reborn Williams Telephone, the cable backbone @HOME, and tons of voice over IP, QoS, and other new applications that promise to change the very way we view communications. We've just gotten back from visiting with the Telecom Resellers Assocation (they all want to be ISP's), a cable industry meeting here in Denver (they all want to be ISPs too), and Bob Metcalfe's Vortex98 – one of the most exciting summit meetings of the year with essentially every major player from every major company that either is an ISP, a backbone operator, or a toolbuilder.

Bottom line, I think I've as usual devised as good a solution to the current challenges as was available. Alan Meckler and I are joining forces for total domination of the heart of the Internet space – worldwide. And Jack's not gone anywhere – in fact the story is Jack's back. And he now has the infrastructure and ability to devote full focus to this industry, these publications, and these events without drowning in the administrivia of running the business side. Already I'm growing hazy on just how we handle vacations for employees, but I'm quite excited about Scott Kriens and Juniper Networks and their thousand mile-per-hour core router that they think will kill Cisco and change the way the Internet works – watch for more on this. I don't in fact recall where we store the letterhead or how much of it we should probably order, but L3 Communications went public last week at $22, shot to $28, and is building an entirely IP based telephone network from scratch. And while I may be a little hazy over who gets which office at the new facility in Golden, I'm very much aware that Joe Nacchio of Qwest Communications is a thoroughly dangerous man and no one should wear loose clothing anywhere near where these guys are operating equipment. They're doing a deal per week and will alter the status quo power structure of the Internet by year's end. ◆

I'm back.

Jack Rickard
Editor Rotundus

ONLINE RESOURCES

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Letters to the Editor

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LETTERS TO THE EDITOR

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THE REAL PROBLEM - Y10K

I was wondering what your thoughts are on the year 2000 scare - just how realistic is this and what effect do you think it will have on the Internet. I have been buying your magazine religiously almost since you started and have a deep respect for your thoughts, opinions and research that you share.

Thanks,
Steven Schwartz

Steven:

I'm probably going to get bit by this one, but I've never been too awed by the Y2K problem. It will undoubtedly effect some financial software, large mainframe systems that have been in place for years, etc. For PC users, we've never had a PC make it more than about three years anyway. But it does hold the potential to dramatically increase consulting software contracts over the next two years.

Of more concern is the Y10K problem. When we actually have to go from four digits to five digits, I think there are some MAJOR potential problems there. We should really start getting ready now for Y10K.

Seriously, the way I understand it, at the turn of the century, some of our software won't work. We avid Microsoft Software Users laugh in the face of such danger. Our software never works, and we're proud of it. If we are affected by Y2K, it will be hard to tell. For one thing, the world was created for us on January 1, 1970 at 00:00 of that date. We count clock ticks since at about 18.2 per second. We get 1,572,480 of these ticks each day, and we're counting them quite carefully.

I fully expect the Internet to break on January 1, 2000. But also on December 31, 1999, and January 2, 2000. And rather every afternoon both before and after.

There have been so many predictions of doom from Y2K, it almost has to be made to happen. Every journalist in the country will be doing the countdown till the computers quit on January 1, 2000. That most of them will continue to work without comment will pretty much have to be ignored. Something will break somewhere, and that's what we'll see on television.

I'm sure the problem is more serious than I treat it. But after trying desperately, I just can't work up much personal interest in this problem. What - they didn't know the year 2000 was coming? No one in the computer industry thought anyone in their right minds would be using their products that long?

Jack Rickard

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DOUG SHAKER IS HONEST

I'm sorry I'm writing you so late, this article was published in Sept '97, my excuse is that I don't actually subscribe to or purchase your magazine, but just get the occasional freebie at NANOG. They end up in a pile in my throne room, and tonight I was, well, you know. . .and read Doug's article.

In the article Doug writes about his experiences upgrading a peecee to Win '95. Mostly he bitches about how nothing works right, seemingly a direct result of trying to re-use existing "upgrades" he has laying about the garage, and I suspect they were distributions that were installed on many, many other machines in his home and business, his friend's machines, etc.

Doug should have gone out and bought a legit, licensed copy and followed the instructions. Sometimes it pays to be honest. He then goes on to speculate as to Apple's future in the marketplace. If Doug is a representative Apple customer, that would certainly explain Apple's dismal market performance. Their customers buy one copy of something and then install it on every machine in sight.

Aaron Nabil
`nabil@teleport.com`

Aaron-

You are making the assumption that my copies of DOS and Windows were installed on multiple machines. While this is a reasonable assumption - I am sure that most people operate that way - it wasn't true in this case. The Windows 3.1 was from a box that had been converted to a Windows NT copy (new copy, not an upgrade).

I bought the copy of Windows 95 for specifically the box I was working on and my copy of DOS was one that had formerly been on a box that I had since made into a Linux box. The frustration on my part was that I HAD a legit copy - although of ancient vintage and on 5 1/4" floppies - and I couldn't use it without LOTS of hassles.

Still, you make a reasonable assumption. It just happens to be wrong in this case.

Doug Shaker

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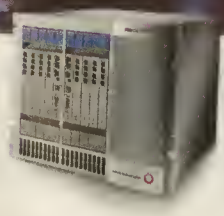
CANADIAN ISPS FIGHT HUGE TELCO

Dear Jack:

I read your editorial "You, Me, and Computer III - The XDSL Rosetta Stone" with great interest. The monop-



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oly mindset is still rampant in the teleco business, and it's not only a problem in the United States. I hope Bell doesn't read ***Boardwatch***, or they might try the "disappearing tariff trick" you outlined.

Right now we have teleco-owned ISPs buying ADSL from teleco suppliers (at $200 a line), and reselling it well below cost ($70). We also have experienced delays of up to a year in getting access to third-party cable access from our monopoly cable outlets.

Canadian ISPs' history with telephone companies has been one of duplicity, delays, predatory pricing, institutional incompetence and deliberately anti-competitive activity. Early this year, our Bell representative informed us that we'd get faster service if we submitted business projections to his boss, a Bell vice president, Pierre Pugliese. Other ISPs later told us that they also submitted projections at about the same time, also at the request of their representatives. That same Bell vice president, in charge of supplying ISPs with phone services, was recently active in personally promoting Bell Advantage Internet Services.

We've been given conflicting explanations as to why this VP, a Bell ("utility" division) employee, was speaking for Bell Advantage Internet (a "competitive" division). We were first told that he'd been switched to Bell Sygma. In researching for our comments in this and similar letters, we were told by Bell's human resources department that he was never moved at all. Regardless of his actual affiliation, there is a clear appearance of conflict of interest (not to mention confusion as to his role at Bell Canada). He has not stepped forward to allay our concerns, nor to clarify his role at Bell. There is supposed to be a clear separation of "utility" and "competitive" divisions at telecom companies in Canada - a separation that Bell calls "the Chinese Wall." It would appear that Mr. Pugliese is playing both sides of that wall.

I am on the board of two national ISP associations. It's critical that ISPs organize, even informally, to share information and to mobilize when they see evidence of anti-competitive behavior. In Canada, Responsible Internet Service Companies (RISC - `http://www.risc.ca`) functions as a watchdog and lobby group on behalf of independent ISPs. Two years ago we managed to get Bell Canada to back off a proposed 300 percent rate hike in Ontario and Quebec, and we are currently lobbying for stronger separation between Bell Canada and its subsidiaries.

The "ADSL Group" has formed to submit what is called a "six person complaint" to our regulators to demand an inquiry into teleco ADSL pricing tactics. RISC will be focusing its own complaint filings on unreasonable denial of service, and the sport of "Executive Chinese Wall Hopping."

Small ISPs often feel powerless and overwhelmed when it comes to dealing with well-financed (and well-lawyered) telephone companies. Pooling your resources is the best way to make a difference. Don't roll over! In one Canadian province the ISPs failed to mobilize against the price increases and as a result, their users are paying $5-$10 more per month on average than users in Ontario and Quebec.

By the way, at the recent Annual General Meeting of the Canadian Association of Internet Providers (`http://www.caip.ca`), Canada's Deputy Minister of Industry, Michael Binder admitted that our government gets most of what it knows about ISPs from ***Boardwatch Magazine***. We're hopeful that you will keep a careful eye on what happens North of the border.

Please feel free to contact RISC at any time:`info@risc.ca`. We would be happy to network with other ISP associations, network and share information.

John Nemanic
President
TUCOWS Interactive Limited
(DBA Internet Direct)
Ph. (416) 233-7150
E-mail: `nemanic@idirect.com`

John:

I applaud with all enthusiasm your work with RISC on behalf of Internet service providers across Canada. For some in the old guard of monopoly communications, competition is a very bitter war and they bring an approach to it that I personally consider intellectually meager and morally reprehensible from a human point of view. There is another view that I have actually heard expressed a number of times within the ISP community that "the good guys never win." I do not believe it. You need neither stoop to similar tactics nor concede the field. The least among us are always among us. But the big boys are the ones who rise above it to accomplishment. I would urge you to post your case clearly, persistently, in professionally organized fashion, and in all sincerity for the greater good of all competitors, customers, shareholders, and the network at large. In the long run you will out most inevitably, if not most immediately.

It can be difficult, when up to your ass in alligators, to remember you are there to drain the swamp. But bringing Internet connectivity to furthest corners of Canada is a good work, a worthwhile mission, and worthy of your efforts in this life. Wherever we may be privileged to assist, we will make it so.

Non illegitimi carborundum.

Jack Rickard

◆◆◆

ISPCON EXHIBITOR HAPPY

Jack,

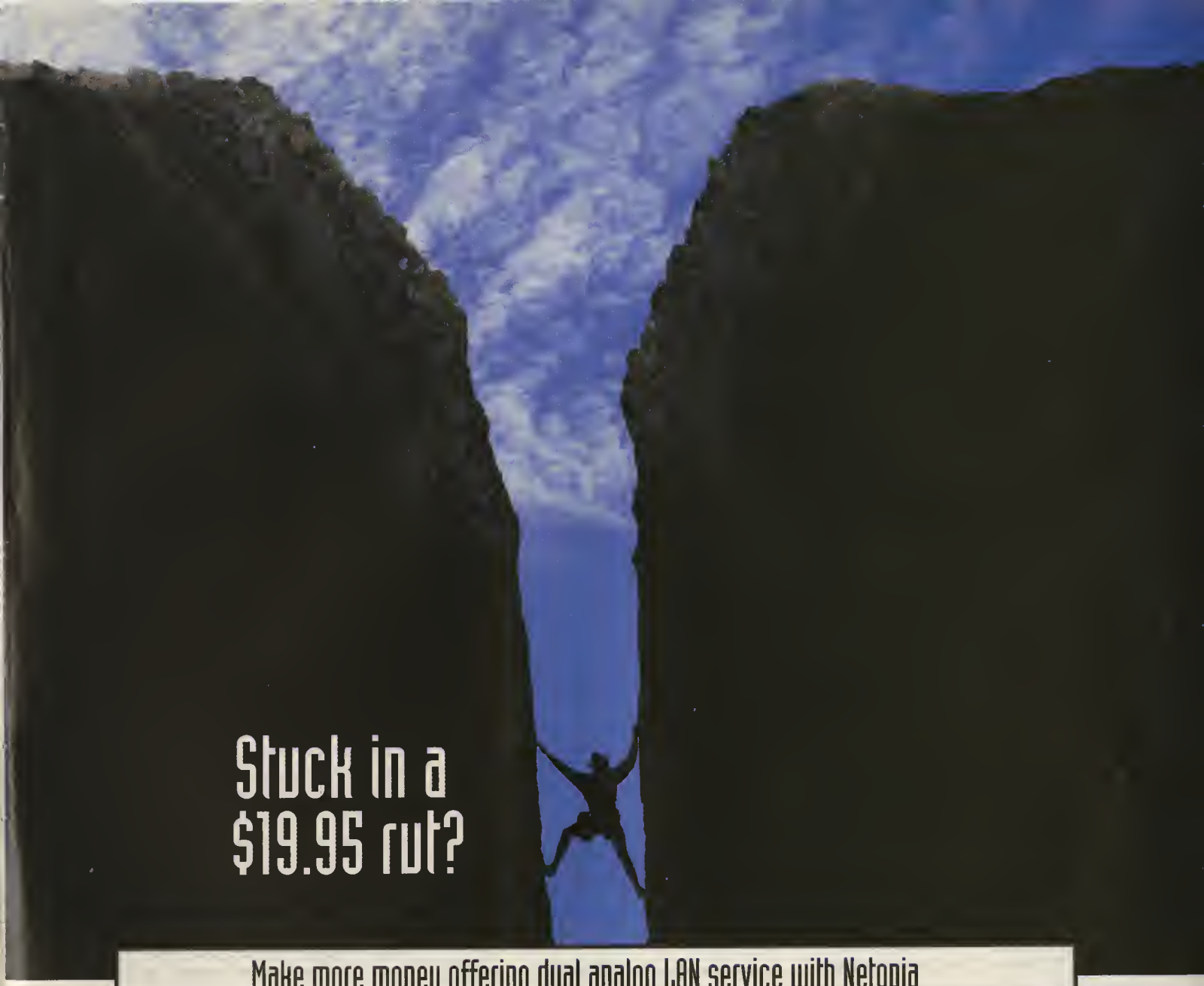
I had my first experience with the ***Boardwatch Magazine*** organization a few months back during ISPCON in Baltimore. As a first time exhibitor, I was not sure what to expect. What I found was a highly concentrated attendance populace with specifics needs and intention to procure products, services, and tools to enable better services delivered to their customers an more efficiencies on the overall INTERNET.

We were fortunate have to Avi Freedman demonstrate our unique product differentiation by standing atop of three CSU/DSU's....and John Fellers was gracious enough to oblige us with a photo session....and the cu de grace was Todd Erickson was able to work into the May edition of ***Boardwatch Magazine*** headlined "Avi Freedman balances." TELINC is a growing manufacturer of CSU/DSU access devices and quickly becoming the "Access Vendor of Choice of ISP's" for WAN connectivity and business to business Internet.

I would like to send you a shirt in appreciation for your organizations cooperation and look forward to the opportunity to invite you to dinner during ISPCON West 9/28/98.

Thanks Jack.

Lou Vogel
VP Sales-TELINC



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Lou:

Very pleased to hear that it went well for you. We have a bit different theory of how to do a useful trade show, and it is a bit unusual with much smaller attendee counts and a much higher educational component. This is unpopular because trade show companies profit from huge economies of scale.

It doesn't cost much more to do an Internet World than to do an ISPCON, but they have much higher exhibit space and floor traffic. We have inverted this. If you note, our space is priced higher, and our body count is lower. And the body count has to pay a much higher fee to be there as well.

But it actually delivers better value and is much more manageable if your mission is to get in front of people that can actually BUY a fairly specific range of products or to learn specifics on needs and desires from a focused customer base. I'm not actually putting much effort into explaining this other than by demonstration. As you saw from the exhibits around you, a lot of pretty heavyweight companies are "catching on" to what we're doing anyway.

Avi and the photo-op were probably largely luck. Todd didn't have to "work it in" much. It was a lucky shoot - fat guy with trick T-shirt standing on equipment. That will make it every time. He's one of our columnists.

Registrations for the fall event are going nova right now. It will be larger and better than Baltimore. And we're seeing a lot of CLEC and telecom resellers now in the mix. We're looking good to go.

Best wishes for continued success...

Jack Rickard

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MORE ANGRY CANADIAN ISPS

Dear Jack:

I am writing to clarify some statements made last issue in a letter to the editor. The article concerning the fight with US West over their elimination of the LADS tariff does bear a resemblance to the fight Canadian ISPs are waging against Bell Canada. Here they are focusing their efforts on predatory pricing and denying collocation to ISPs who request it.

As Stephanie Donovan indicated, the Canadian cost of ADSL is about $200.00 per month, a service Sympatico (Bell's ISP) is selling for $70.00 a month. There are many Canadian ISPs actively in dispute with telephone companies. Responsible Internet Service Companies (RISC) was not created to fight the ADSL issue specifically. The group fighting for fair ASDL tariffs is called "The ADSL Group", and it is headed by Lorien Gabel of Interlog (`lgabel@staff.interlog.com`), also a member company of RISC. RISC has actually been in existence for over two years, and its founding members were principally involved in the formulation of the Canadian Association of Internet Providers (`http://www.caip.ca`). You may recall a Centrex Tariff increase of 300 percent two years ago Bell filed ... we were successful in getting Bell to withdraw that tariff. During that time, we received letters from Italy, Australia, South America and the United States, from ISPs who had similar experiences.

It now seems that Bell wishes to unload responsibility for the confusion onto its sales representatives, a move we find less than credible. Overall, we have excellent, and we believe honest relationships with our reps, who are trying hard to do a difficult job with little or no support from the upper levels at Bell. We want it clearly known: our problems lie not with our installers or sales reps, but with the policy-makers at the executive level.

Achilles, like the more than 60 RISC-member companies, has experienced delays, billing problems, and predatory pricing. Internet Direct has waited up to three and a half months for installations in some suburban areas (when the standard wait is 4-6 weeks). Bell's VPs are still using last winter's ice storm in Ottawa as an excuse for the delays! Despite these delays, Bell Advantage Internet, a new division related to Sympatico, is offering to give away Internet access to long-distance customers. It has been quoted as saying the service will be an improvement over Sympatico's. We presume this means no busy signals. We're asking the media to ask the pertinent question: "Where will Bell Advantage get the phone lines, since Bell Canada has told competing ISPs that there is not enough equipment to go around?"

These incidents seem to happen in greater frequency and hit with greater impact in the three-month period before any major Bell/Sympatico promotion. We acknowledge that it is possible that these occurrences reflect incompetence, or a lack of customer service ethic, and not deliberate malfeasance, but the cause is irrelevant: either way, small ISPs are suffering an inordinate level of stress at the hands of monopoly telephone suppliers. The only way to address this is to move beyond griping to concerted and organized action.

You were 100 percent correct in encouraging ISPs to band together. It's been my experience that most ISP owners are more comfortable with the inscrutable

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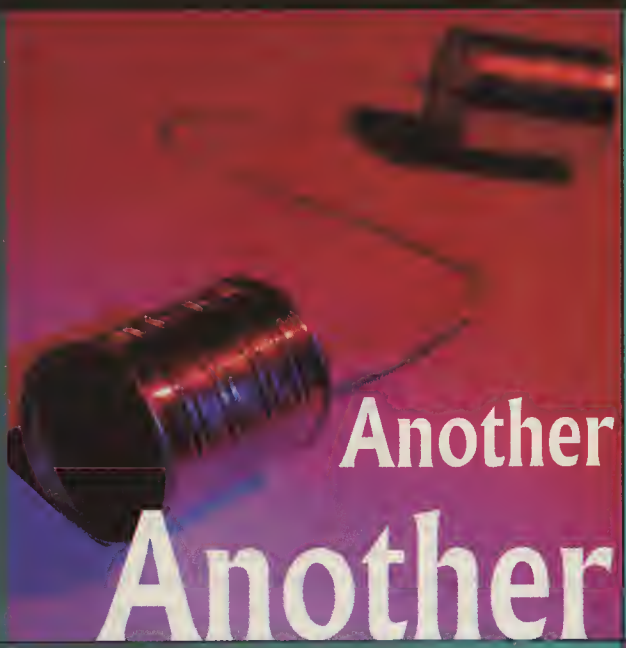

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language of UNIX than the impossible legalese of telecom law, but the fact is we will be bulldozed under if we stand still. RISC is currently in the process of formalizing itself as an association, and is in the process of collecting complaints to be filed with the CRTC and Competition Bureau. Interested ISPs in any part of Canada, and supporters from all countries, are invited to join RISC. Please visit our web site at `http://www.risc.ca/`.

Kind regards,

Brandi Jasmine
Interim Coordinator
Responsible Internet Service Companies

Brandi:

Thanks for the clarification, but I already understood rather well. The ISP/telco situation is rather longstanding. That when caught, they would somehow seek to shift blame to their employees is all quite in character - if irrelevant. Similarly ice storms.

The bottom line is that they'll do what they can get away with, and have no other moral or ethical compass in place. My earlier response was to urge action, but never to adopt the same position. To fight the Vandals and the Visigoths, we need not become them or simulate them in any way.

This is not so Jesus will love us. Over the long term, their tactics will become the very petard upon which they are hoisted. We should strive for clarity that at that future time, all communications companies are not cut of the same cloth.

Jack Rickard

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TELCO HAS POOR CUSTOMER SERVICE

To Mr. Rickard;

Love the magazine. The articles are really informative, and I usually find the information useful in one aspect or another. I've read ***Boardwatch*** off and on again since I started in the computer field many years ago, and the level of technical expertise has always been high in the pages of ***Boardwatch*** (unlike some other magazines I won't mention).

Now, about this message (I apologize for the length...it's a really long story). I just had a rather "enlightening" experience dealing with Nynex recently that I think that anybody who is looking into getting a 56K modem, or who is trying to improve their connection would find interesting. For about 3 1/2 years, I have been plagued with poor phone lines in my area of town. For the most part, I just accepted it and tried to deal with it the best that I could. In that span of time, I've gone through two computer systems, and about five modems ranging in speed from 2400-56K. The upgrading of computers was done just to keep up with technology. The modems on the other hand were an attempt to try and speed up my connection on my rather lousy phone lines.

Initially I had started out with a 2400 baud modem. Unfortunately, that was about the most stable modem I ever had, because higher speeds only seemed to be an exercise in futility. I eventually upgraded to a 14.4 modem, and although it was quite capable of going 14.4, it had a tendency of dropping the connection. I then built a new PC clone computer, and outfitted it with a Supra-Express 28.8. Highest baud rate attainable: 26.4 Kbps, and rarely dropped a connection. When the 33.6 update came along for that modem I ordered the update ROM for it. My highest baud rate was still 26.4 Kbps.

About a year ago, I bought a USR Sportster 56K. Now when I bought the modem, I wasn't expecting at all to get 56K... or anywhere near that for that matter. I was hoping that I could at least get 33.6. Well, no luck there either. The highest baud rate I could get was 31.2 Kbps. I started to think that the problem may be in the wiring in my home and with my main phone line, so I ordered a new line, and installed a dedicated jack for the modem use only using new wire and parts (I even went out and bought a spool of Monster Cable speaker wire (what can I say, I was starting to get desperate), and used that for the internal wiring in hopes that it could help). The problem still remained. I even bought a gold plated serial cable (I'm using an external modem), but that didn't help either. A few days ago, I decided to try a 3Com/USR Courier V.Everything 56K, since it can handle noisy phone lines better than the Sportster. I brought it home, hooked it up...and finally, after about a year of trying, I'm finally getting at least 33.6...about 10 percent of the time. I downloaded a troubleshooting guide from 3Com on how to diagnose x2 connections, in hopes that I could track down the problem. I ran through the procedures, and came to the conclusion that I probably have a really terrible local loop, or some other problem outside my home.

I decided to give Nynex a call to see if I could get to the bottom of my line noise problem. The initial person I talked to was very nice, and told me that there was probably something wrong with the switch in my area of town. She then directed me to their repair center for further help. As soon as the person answered, I could tell that he was not exactly a technician, and was just somebody who answered the phone. He told me that he was going to hang up, test my line, and call me right back. Well, he did call me right back (I'll give him that much) and he said that there was nothing wrong with my line, and the problem had to exist on my end. He then went on to suggested that if I would like to have a line with less noise so I could achieve a faster connect rate I would have to order a dedicated line, or to order ISDN service, as Nynex only guarantees a 28.8K connect rates on standard phone lines. Now I have to ask one question... What did I just miss??? Why on God's great earth should I have to order a leased line or ISDN service to fix a problem with line noise?!!? Although I am not exactly poor, I am by NO means rich enough to be able to afford ISDN service in my area, or a leased line.

Now remember, over the course of 3 1/2 years, I have gone through:

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Two computers
Five modems
a new phone line
new phone jacks
and new internal wiring in my home

and yet Nynex insists on telling me that the problem exists somewhere in my home, and they'd be willing (for a fee) to come out to my home to test my home wiring, just so they can come to the same conclusion that I have. It's enough to make a grown man cry. Another annoying part of all this is that a friend of mine who lives about a mile away from me (still in the same town) has no problems whatsoever. In fact, I let him try out my older Sportster 56K to see if he liked it. Almost every time he tried it, he was getting 48,000 baud connects (the slowest he ever got was a 47K connect). Mind you, we live in the same town, not too far from each other.

With all the hell I've gone through on this issue, I personally CAN'T WAIT for my local cable provider to start offering cable modems as well as telephone service. Mark my words, two seconds after I hear that they are offering both of these services, I am signing up for them. I don't care if it costs me an extra $100 a month on top of what I already pay either. Nynex has been far from helpful, and although I can understand them not supporting data calls on their lines at any higher speeds than 28.8, I don't need my intelligence insulted by telling me that the "official Nynex way to do it" is with either a dedicated leased line or an ISDN connection. Now mind you, all of this is coming from the same company that wants to sell you xDSL in the near future. Since they can't even get a modem connection working correctly, I'm willing to bet they can't get xDSL working either. Maybe that's why you can't order it yet. Or perhaps what's taking so long is that they are pondering a name change from xDSL to ISDN2 - a.k.a "It Still Does Nothing too."

One frustrated user,
Manny Rego

Manny:

I share your frustration. Incredibly, the local telcos are touting their incredible customer relations as one of their primary assets as they start to deploy xDSL and other forms of Internet access. They actually believe that a large percentage of their customers LIKE this sort of treatment. This is precisely the reason we really do need to move to a truly competitive market in local telephone service. There is really no motivation to make you well.

Basically, there are performance specifications for voice telephone lines, and the telcos in most areas are required to maintain performance within those specifications. In theory, it is possible to have lines that work within spec for voice, but not be able to carry data at high speeds. This is the "out" that the telcos use in this type of situation.

In actual practice, this is total bullshit. Today's modems are sufficiently robust to pass data at quite high speeds on any voice line that is actually within performance spec. But the telcos are wont to call you on the line, and if you answer - it's working. To get them to actually test the line to see if it complies with performance requirements can be extremely difficult.

That said, the telephone company is pretty much whoever you talk to there. I developed a strategy years ago that has served me pretty well. Whenever I talk to a phone company, if I don't get the answer I want, I wait an hour and call back and talk to someone else. In an amazing number of cases, I get a totally different reaction and totally different solution to precisely the same problem I had an hour ago. I don't rehearse all the prior conversations and solutions. I just call back with the problem anew and hope for someone different in the "repair center" or the "service desk" or whatever.

Beyond this, I can tell you that a 2B+D ISDN line with an Ascend Pipeline50 connected to your ISP is indeed more expensive. But it's a lot better connectivity, if you can afford it.

Jack Rickard

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UUCP MAIL PROGRAM

Hi Jack.

The May issue of BW came through the mail slot this morning, so I'm busy reading every word as usual. You mentioned the last time you were in the software business was when you wrote PIMP for UUCP mail. I just wanted to tell you that PIMP allows me to make a living selling email services... thank you thank you THANK YOU! Now go write something else we can turn into cash. :-)

Ken Milbrath B.Sc, MBA
`sysop@krdata.com`

P.S. Don't know if you want to print this as well - your call, but I wish BW was still supporting it. Shortly after you sold PIMP to eSoft, they decided to stop supporting it - renamed it Tiger, it's still Version 1.0. eSoft then tried to sell me their IPAD, and I can understand, their market was changing and they're a small shop. But here's the Bus 101 kicker... they stop supporting ken, ken stops supporting them. Successful ISPs understand this concept. bye bye.

Ken:

To my knowledge, PIMP was the only UUCP implementation ever done in assembly language, and was undoubtedly the fastest UUCP mail transfer agent ever done - if you can live with UUCP and fast in the same sentence. I am probably the last computer journalist left in the world that can write production communications software in assembly language, for what that's worth.

But technology moves on. eSoft had to as well. And despite having written PIMP, we use an IPAD here at ***Boardwatch*** *for all our e-mail duties. And it works rather well.*

Jack Rickard

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LUCENT CHIP FOR K56FLEX

Dear Jack,

I've been a loyal subscriber for two and a reader for five years. I find ***Board-***

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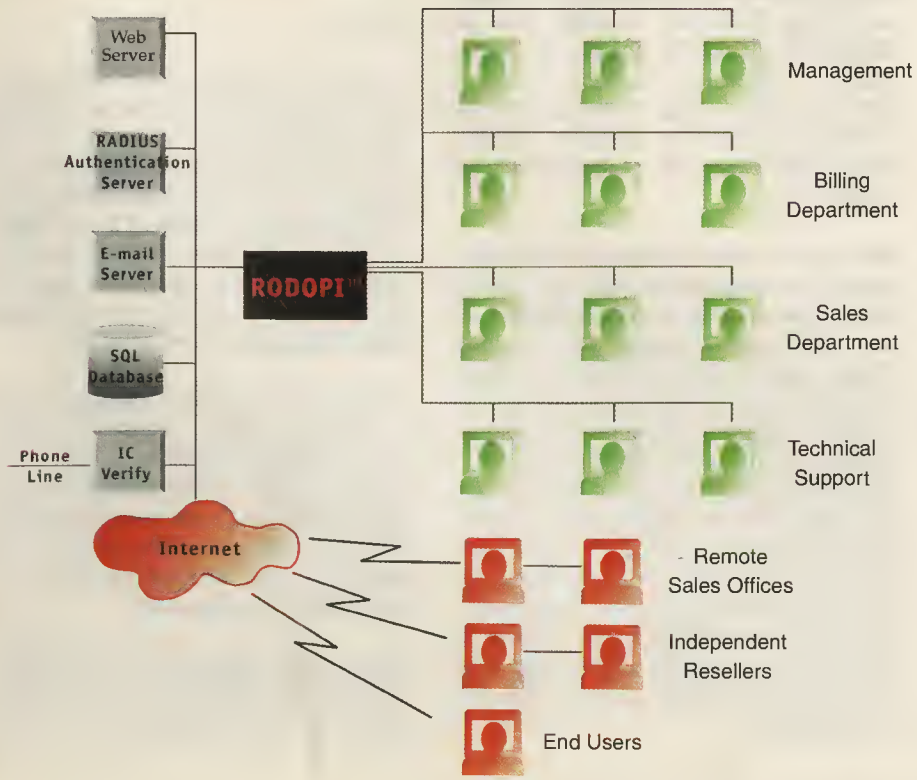

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watch to be both accurate and entertaining. I run a small business in Sonoma County CA installing medical/dental networks. I am frequently asked to hook up remote users and found your 56k article pretty much summed up my personal experience with both x2 and 56k modems. I have been using US Robotic Sportster 56 x2s in the majority of my systems and commonly hook up at 46k to 48k. Upgrading to V.90 is simple with USR's update wizard. My experience with 56k or Kflex modems has been a disappointment with one exception. The modems with the Lucent 1644 chipset hook up almost as reliably as the x2s at speeds of around 46k to 48k. I know you didn't review these in your original test, but I'm sure you'll see similar results. Keep up the good work.

Jordon Berkove
Owner, Exact Specs
exactspecs@thegrid.net

Jordon:

As you point out, all K56flex modems tested used the Rockwell chipset. I now have a Multitech V.90 modem which uses the Lucent chip set and can't wait to get it online dialing. I don't know yet, but suspect all K56flex and all V.90 is not created equal. I'm hoping for good things from this modem.

But it is absolutely true that all of it varies dramatically based on what area you are working in.

Jack Rickard

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K56FLEX/V.90 PROBLEMS

Dear Mr. Rickard,

After reading the article on the x2 and K56Flex modems, suffice it to say I was surprised! It's not everyday that I see such a dramatic difference in such widely publicized products. It warms my heart to know that my USR Sportster has a clear advantage over the K56Flex modems on the market; I've used US Robotics for over six years now, and would continue to do so, especially in light of these new findings.

However, certain questions remain unanswered, contributing to my predicament. You see, my ISP, Internet Gateway (of Vancouver, Canada), has been supporting both the x2 and K56Flex protocols. With my x2 modem, dialing into their x2 modem pool, I could achieve impressive connect rates of 49,333 50,666 and 52,000 BPS. Never once had it dropped below 49,333 BPS. However, after talking to friends and colleagues how were (ahem) proud owners of K56Flex modems, they were continually having problems connecting above 42,000 BPS, often dropping down to 31,200 BPS. I bought into the marketing hype, and assumed that their connect speeds were simply the victims of faulty wiring, or perhaps chronic line noise.

Using my modem for some time, I was eagerly awaiting the V.90 standard so that my ISP would combine the x2 and K56 modem pools (Internet Gateway had many more K56Flex lines). When I heard that USR was offering a V.90 upgrade, I immediately went to their web site, downloaded their upgrade patch, and waited for Internet Gateway to start using the V.90 protocol. Only thing is, now that they are using the V.90 protocol, stems the source of my problem.

You see, the findings of your testing are repeated in the V.90 field as well. Let me explain; Internet Gateway is still using their x2 modem pool (604-687-6877) to which I can connect with no problems. This pool is run by USR rack modems, not supporting the V.90 protocol. Internet Gateway also has had a V.90 pool operative for a little more than a week now (604-638-1100). When I try to connect to the new pool, using my USR modem, I have connect rates strikingly similar to the ones reported by your testing. Their V.90 pool is being run by K56Flex modems (I'm not sure if they're Lucent or Rockwell). It seems that the V.90 protocol is only allowing me the "talk" to the K56Flex modems; I'm still stuck with their low performance and connect rates.

More to the point though, I was hoping to use your program to continue testing this phenomena, for it seems that the x2 and K56Flex differences are not completely solved with the V.90 standard. Should you be so inclined to share your program with me, I'd be only too happy to do some 'formal' testing that would be suitable for inclusion in a future article you may write. I simply want to take these findings to my ISP, with hopes that they can come to some kind of solution. If you need as well, I'd gladly electronically sign a release form so that you could use these results without any kind of legal stigma attached, in a V.90 follow-up article.

I would at the very least, appreciate a response.

Brendan Flynn
harvmoon@intergate.bc.ca
ICQ # 1383906

Brendan:

We have had a lot of requests for the popdial program. Unfortunately, it's somewhat hardwired with configuration data that really must be user configurable for the program to be useful to you. For example, the dialer works out of a database that exists on L:/TEST. I don't have the program set up so that you can simply point to another drive and directory. We didn't envision it as a releasable product originally. It's rather a situation of finding a round tuit. If I can ever get a round tuit, I'll try to go through the code and cobble together something that you could download and actually have a chance of installing it and getting it working on your machine.

We are just now starting a second phase of dialup testing using the V.90 upgrades, and from a different location with a different central office and an entirely different type of central office switch. The results should be interesting.

Jack Rickard

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VERY UNHAPPY WITH ROCKWELL

Hi Jack

I have been reading your magazine for years. I myself used to run an adult BBS here in San Jose, CA a number of years ago. Gee, hasn't the world changed around us. Being a software engineer with a hardware engineering degree, I found BBSs to be right up my alley. Thanks for all the technical help over the years (and that thanks extends to the present. ***Boardwatch Magazine*** is wonderful!!)

Anyway, to my point. I read your article in the last issue, regarding x2 and Kflex. I happen to be in a rather good position. I have a nice setup here in the house with three active machines. Two with x2 and one with Kflex. I must admit. I was not surprised by your analysis of the situation.

From the perspective here at home, we could use the SAME phone lines and get nearly flawless x2 connects and with the

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Kflex, almost NEVER connect at anything above 32-33K. Back and forth with XIRCOM (I feel pity for them. They are latched into the Kflex and are gonna take a bath on it) and they were never able to resolve it. Of course they couldn't. After reading your article I see that the Rockwell people are basically taking us all for a ride. They attempt to create a technology in the lab, without any real-world testing, to compete with 3Com and what does it get us all. JUNK. I am not angry with XIRCOM, but I am more than irritated with Rockwell. I have an Ethernet/ Kflex modem PCMCIA card that is basically worth half its price since that is what a 33K modem/ Ethernet card would cost me.

It would seem that as a user, if all of us Kflex users banded together and tried for a class action suit, perhaps we could win and in the least get our money back. I am quite worried about the V.90 upgrade now also, since your article indicated it might not be the solution we had all hoped for.

Warm regards
Earl Faneuf Jr.
San Jose, Ca

Earl:

V.90 is certainly a gain. But I don't think it will provide the homogenous commodity nature of modems that we have grown accustomed to over the past few years. What modem you use, and what ISP you connect to, will probably make a difference over the next year or so until the modem code matures.

I don't see any other outcome at this point.

Jack Rickard

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IBM MOVES TO LIMITED ONLINE TIME

Dear Jack:

In January you conducted a survey of national ISPs. As a result of that survey you highly rated IBM Internet Connection Services, apparently because of the call completion rate and the speed of the x2 connects. I agreed with your rating at the time but now I believe it is time for you to reevaluate and advise your readers if recent changes by IBM Internet change your recommendation.

I signed up for the IBM Internet 1 1/2 years ago for $19.95 per month. My average usage during the entire period has been less than 30 hours per month. My online time increased during February and March of this year but was still less than 60 hours each month. Just about the time your report came out they sent notification to all their subscribers that they were abandoning the flat rate, unlimited time. In my notification they indicated that I had not exceeded the maximum hours and if that remains the future usage pattern my monthly cost of service would not be affected. The message also stated that there was "a detailed report of your prior monthly usage" available. Not so. Just about the time they switched billing method, the detail of the connections (date and time) disappeared. Now all that is available is a total that the user has no way of verifying. The very first month of the new system (April) they recorded that I was 22 hours over the 'included' time, which meant that the $19.95 I had been paying was now $63.62! I attempted to contact them but they have no email address posted anywhere. They have no postal address listed anywhere. I called the billing account servicing number and was put on hold for 15 minutes.

There should be more to being the "best" ISP than good call completion. The change in IBM Internet Connection Services just as your report was being released may cause some very unpleasant surprises for some of your readers. At the very least, subscribers to this service should be advised to check the charge on each monthly statement and not assume that it is going to be the customary $19.95. It could be much more.

I will also add that having to watch the online time takes much of the enjoyment out of the web experience, especially since it seems that switching to a 'fast' clock was part of the change. My current opinion is that IBM Internet Service should be ranked toward the bottom, not at the top.

Bob Heiges
heiges@ibm.net

Bob:

I understand your frustration and agree completely that there is more to an ISP service than a call completion statistic. At the time, we were in a world where many ISP customers were frustrated with busy signals, and many more discussed how they knew it was an issue, although their provider didn't have the problem. The mythos of the entire topic was out of control and operating with no known factual data. We designed the test to see just how far the problem really ran.

And the results were illuminating. Once again, we find that not all Internet access is created equal. Some services sported marvelous call completion rates. Others sported better connect speeds for most users because of their early adoption of high speed modem access. IBM came up roses on both, and they have a very wide, indeed global, dialup access footprint as well. Call completion rates ranged from mid 60 percent up to very high 99 percent availability. Busy signals are indeed a problem, but only for some.

The down side of large national services is a pretty broad stroke customer service function. My understanding of IBM's new billing plan was that it charged $1.50 per hour for each hour over 150 hours per month. You, or your computer in any event, must be pretty much living online for this threshold to be exceeded. So it sounds like you have a genuine billing hoseup going on there. The frustrating part is the lack of customer service to address it. And I'm afraid to report that with most of the large national services such as IBM, MCI, and AOL, this is pretty much the theme. It's difficult to deliver, and they generally don't.

GTE, oddly enough, is doing extremely well with their dialup program. Though the scores were not quite as good as IBM's, they do have a national footprint, and have grown to nearly half a million subscribers in the past six months. Whatever they're doing, it seems to be working for the moment.

A local ISP will in almost all cases be more responsive and easier to deal with. And some of the local guys are getting national footprint by retailing wholesale services they get from PSINet, UUNET, or others.

Jack Rickard

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ISPCON AND RELIABLE NETWORKS

Dear Jack,

First, let me say that ISPCon has been GREAT for our business! We did exhibit at two other shows (window shopping

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wonderlands), but it was ISPCon '97 that got us launched! Spring ISPCon '98 provided a great environment for our stockholder meeting - I've never seen them more excited. We hope you keep the east/west coast, two/year schedule.

There are two articles from recent ***Boardwatch*** issues that I believe deserve further consideration. The first, "AboveNet-A Meeting Place for All Things Internet" (Feb. 98), discussed some background on Sherman Tuan, the president of AboveNet. Second, the "Brokered Private Peering" white paper (May 98), by Mike Gaddis, chief technical officer, SAVVIS. I have been fortunate to have met both of these gentlemen in recent months and I perceived a serious commitment from both of them, and their organizations, that is a key differentiator from others in our industry-one that could help many local ISPs.

In my opinion, local ISPs have proven they can out-service RBOCs and national players on a consistent basis. However, I do think that many local ISPs could strengthen their business by developing an unrelenting attitude towards reliability and quality. This translates into such items as "carrier class" facilities, redundant systems, professionally installed hardware and, most of all, documentation and processes to prevent or mitigate foreseeable anomalies in the operations side of the business.

My perspective on reliable operations originates from my background as a nuclear submarine power plant operator where downtime was not an option. While ISP operations do not enjoy the budget of an U.S. Navy submarine, there is no excuse (and diminishing tolerance by clients) for downtime and service disruptions that can be avoided by processes, planned procedures, or simply "doing the right thing."

When I visit an ISP, I look at the attitude and actions of the leader for indications of operational reliability. When I spoke with Mr. Gaddis, it was clear to me that he has an insistent, disciplined attitude about reliability. The same was also demonstrated by Mr. Tuan. Mr. Gaddis' brokered private peering plan and Mr. Tuan's network design strategy are clear "ACTION INDICATORS" that evidence a mindset to drive reliability and quality throughout their respective operations. Local ISPs that do run organized operations know that customers sense these things, and their business is better for it.

I am intrigued by the fact that two of my company's three network providers were showcased in these ***Boardwatch*** issues. Until recently, our third provider was lead by a president with such commitment. Unfortunately, he just resigned so we are a bit concerned about their commitment to excellence going forward.

Michael Betts
`mbetts@ispnews.com`
President, ISPNews, Inc.

Michael:

Very pleased to learn that ISPCON worked for your company. We have done a somewhat innovative thing in working for focus rather than body count at a trade show. It would appear counter-intuitive if your mission is to grow a trade show event. But it has worked rather nicely for attendees, exhibitors, and ourselves and in some ways has created a new kind of event all participants seem to be finding productive. We do have firm plans to hew to the spring/fall east/west model here in the United States.

But we've also received a great deal of pressure from both foreign attendees and our exhibitors to expand ISPCON internationally. By merging with Mecklermedia, we think we can do this with both precision and in an impressive time frame. ISPs in the United Kingdom, Australia, South America, and even areas such as India are growing in number and importance. We're going to be there for them.

In an emerging technology that is still far from plug-and-play, we think the dominant issue will remain customer service for awhile. But I agree completely that as real business increasingly moves to the Internet, carrier-class bulletproof operations will become increasingly important and a key differentiator. Under the current architecture, local ISPs who are artfully multi-homed to several national backbones, actually have a bit of an inherent advantage in this area.

In fact, it is a touchy issue. If you note, there is no mad scramble to capitalize on backhoe incidents by those ISPs unaffected. The reason is that at this point ALL are vulnerable. The only exception I can think of was AT&T, that made such an issue of their "carrier-class" network that I invited them in after the spring ISPCON to sell me a connection. They arrived on April 13th, and insisted I sign a non-disclosure agreement before they could give me the sales pitch. I fear I may have offended them when I actually laughed out loud and responded with "What? You could sell me one, but then you'd have to kill me?"

Irony of ironies, that very afternoon their world class Frame Relay network cratered so badly, I have never heard a rational explanation of what they found after examining the smoking blackened pieces. It was down for more than a full day.

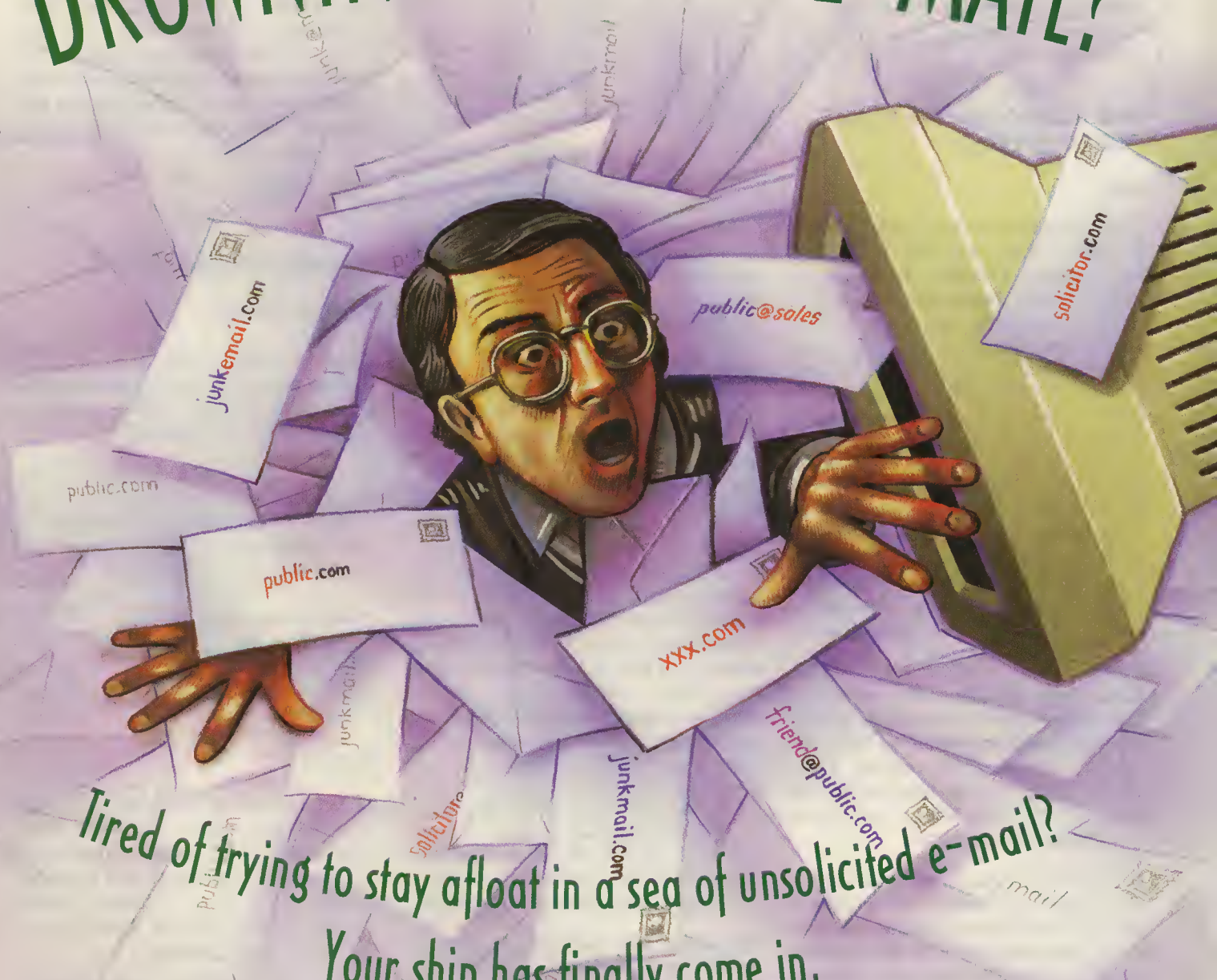
And nothing is impervious. The demise of the Galaxy IV transponder communications satellite left credit card transactions, credit card gasoline pumps, and paging networks completely cratered and in ruins for days. How you get a backhoe into a sufficiently stable orbit to do such damage is beyond me, but it happened.

So most network operators almost view the act of asserting bulletproof operations superstitiously as a quick way to crater your own network. You're almost baiting the backhoe gremlins by mentioning it. But I agree that it will increase as a central concern among customers. I'm just uncertain how you achieve it in today's networking environment.

When you have your own monolithic network, dedicated to doing a single thing, using equipment that is designed, built, and amortized over decades, it is both expensive and difficult. When it is a network in an environment of hundreds of networks, rapidly growing, using equipment that was designed last Christmas, and due to be replaced by next Valentine's day, that you mostly know how to operate, except for the yet to be discovered "software anomalies" of course, and when any would-be science fair entrant can shoot BGP routes into your network and make whole portions of the Internet wink completely out of existence, I'm a little unconvinced we are approaching delivery on those "bulletproof" expectations. And for the foreseeable future, I will view any claims of such with a dose of skepticism.

Hopefully, the network will improve, but customer expectations must be modified realistically as well. There are certain advantages to participating in a global network of networks. But to some degree, you have to take what comes with. Automobiles did offer certain advantages over horse drawn carriages - the ability to breed and grow fuel in the

DROWNING IN JUNK E-MAIL?



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south lot not being among them. Similarly there are economies and advantages to communicating over the Internet rather than by direct dial circuit-switched networks. Utter reliability is not yet among them.

Bottom line - good goal, but get real.

Jack Rickard

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NEW MEXICO ISPs FIGHT US WEST OVER XDSL

Jack-

I read with interest the article by Janet Coursey in the March 1998 Boardwatch on the subject of "Lessons Learned in the LADS Tariff Proceedings in Colorado." Such a proceeding took place in New Mexico several months ago as US West petitioned and removed the LADS tariff at the State Corporation Commission, the telecommunications regulatory body of the State. It was only the first step in an attempt to introduce their ADSL service and to offer a bundled service under tariff that appears to be anti-competitive for their unregulated company, uswest.net. What is worse, the consumer public may not understand the quality of service, i.e., no guaranteed bandwidth (UBR), that is implicit in this offering because of the way it is being marketed.

New Mexico Technet and a number of the Internet Service Providers of New Mexico have intervened in the tariff proceedings for numerous reasons. These reasons are succinctly stated on our web page at the URL: `http://www.technet.nm.org/press.htm`.

I thought you might be interested to know about the next steps in the process that US West has in mind for each state as it introduces its "new fast Internet access" service, after they have eliminated the ability for independent companies to offer similar service over LADS-tariffed lines. If they have their way, uswest.net will replace numerous small ISP's throughout the US West territories, supported by a public tariff.

Should you have interest in following the happenings in New Mexico as they unfold, please feel free to contact me.

Sincerely,
Daniel N. Payton, III
President
New Mexico Technet
(505) 345-6555

Daniel:

Broadly I applaud any effort to deliver higher bandwidth to the home, and I'm seeing some very self-serving posturing from among the Internet service providers. But it is true that US West has engaged in tyrannically anti-competitive behavior with regards to xDSL and I think continue to do so. Ultimately, I think we'll find that Bob Metcalfe is again right that RBOCs will be found unfit to participate in Internet access.

But the dynamics of xDSL are terribly interesting right now. US West has plans to connect 100,000 customers to a 256 kilobit xDSL link at $40 per month under their RADSL program. At the same time, they are ostensibly offering the same facilities to ISPs. Let's work a four function calculator for a minute.

Let's assume that they do connect 100,000 customers at 256 Kbps or higher. We know from dialup experience that a ratio of 4:1 is certainly doable, and on the assumption that RADSL is nailed up all the time, let's double that. Let's say that an 8:1 ratio is workable just to give them the benefit of the doubt. That looks like 12,500 x 256 Kbps of connectivity needed to the core or 3.2 Gbps of upstream connectivity. Hello. If they HAD that much connectivity to the Internet, the Internet doesn't have it. So no one is going to actually get 256 Kbps even momentarily. More likely, if they do sign up 100,000, they have pretty much cratered and burned their system up in smoke in front of us, quite publicly. I think it is a very interesting experiment, and can't wait to see the results. It could be the largest and most public flameout in all of networking. And every word I hear from them would tend to indicate they are TOTALLY clueless on this little basic arithmetic.

Meanwhile, they will offer Megacentral facilities to ISPs. Were I in the ISP business in US West territory, I would be signing up for this, and offering relatively high speed connectivity to small and medium size businesses at a much higher rate than the $40, and a much lower one than my current T-1 and Frame Relay services. But I would keep a close eye on the ratios between connectivity sold and upstream connectivity, and try to ensure that the end users I did sign up actually got at least part of what they're paying for. I think xDSL will work on a small scale, and will actually kill anyone who tries to do it at this point on a large scale - at least until they can master the magic of the four function calculator.

My sense is that one more time in a row, you're about to see a dinosaur do your marketing for you, without hope of taking anything away you were actually going to get in any event. Those ISPs that quake in fear of the coming telephone company, who has BEEN coming since I started following this in the early 1980s by the way, will actually find a way to be run over. Those who take whatever the latest technology available is and make it their own with real products and services that work now, will likely do very well - again/still.

Jack Rickard

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SEARCH ENGINES AS ISPS

Dear Mr. Rickard,

Have you heard of any ISP expressing concern about this massive ad campaign claiming that "Your online service is already outdated" by Yahoo?

Should search engines become ISPs? Would it cause a lot of grief to them (Yahoo) if people start to add Yahoo to their DNS, pointing it to a "Fair Play Search Engine Services" page?

Please give me your opinion.

Camilo Pereira
PactCom
`camilo@pactcom.com`

Camilo:

ISP's express a lot of concern on a wide variety of topics. I am aware that Yahoo and several other search engines are attempting to "work the brand" and some of that seems to be vectoring toward dialup accounts. I'm not certain where all that leads ultimately.

Should search engines become ISPs? I don't know. If they want to become ISPs and could do a good job of it, I suppose they "should." It's a little metaphysical for me.

Monkeying with DNS to redirect to some "other" search engines sounds like a bad idea. What if someone relies on it working as it was designed to?

Jack Rickard

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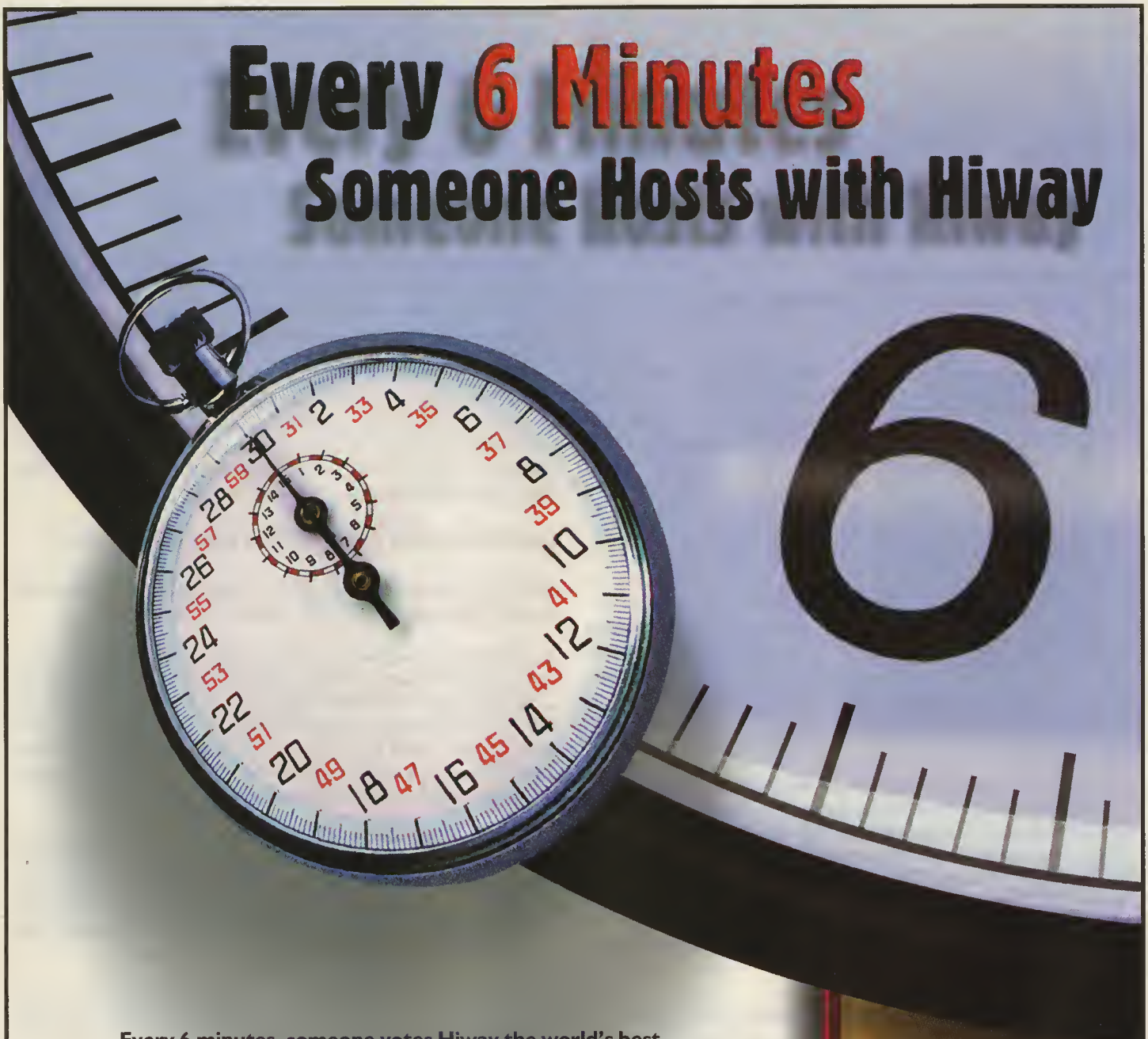
Every 6 Minutes
Someone Hosts with Hiway



Every 6 minutes, someone votes Hiway the world's best web hosting company by trusting their site to us. Many are moving from elsewhere to take advantage of Hiway's world-class infrastructure, 24x7 technical support and 99.9% uptime guarantee. Some find that going with the world leader is just more reassuring. Everyone likes the fact that they don't have to pay more for these advantages.

When it's time to host your site, think about the 80,000 sites we're already hosting. That's 80,000 votes of confidence. One every 6 minutes. *Host with us today at www.hiway.com*

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MOCKINGBIRD NETWORKS INTRODUCES NUVO IP TELEPHONY SWITCH

Mockingbird Networks introduced the Nuvo 100 telephony switch, which is designed to interface public switched telephone networks (PSTN) voice circuits with IP networks or backbones. Mockingbird says the Nuvo switch allows carriers and Internet service providers to interface local exchanges and offer telco-quality telephone service to their customers via the packet switched IP network.

Mockingbird said its new class of Intelligent Network (IN) SS7 provisioning, the Scalable Tandem Access Router, allows Nuvo switches to imitate standard PSTN voice switches while converting pulse-coded modulation (PCM) voice or fax circuits to IP packets. Through this interface, Nuvo switches appear to the PSTN as an end-point switch, while to the IP network they appear as routers capable of moving voice and fax as data. A single Nuvo 100 switch can route 96 calls between multiple POPs.

The Nuvo switches (`www.mockingbirdnet.com/product/nuvo100.html`) are designed with fully-redundant hardware, including MVIP switching, and can be installed in 19-24 inch racks or floor standing. The Nuvo 100 can be collocated in central offices, and ISP network centers, or installed on a customer's premises.

The Nuvo 100 features 40 Sbus slots for MVIP and IP cards, four 38 GB hard disk drives with optional disk monitoring, 100BaseT, ATM, and WAN interfaces, integrated IN and IP processing by UltraSPARC processors, dual UltraSPARC II switch engines with 200, 266, or 300 MHz processors, and dual LSSGR alarm units.

A single Nuvo 100 switch supports 96 full-duplex voice channels, and can be expanded to support up to 10,000 channels by adding additional switches. The SS7 provisioning software and IN hardware is only required in the primary switch, so the cost per-port may drop in large scale POPs.

The Nuvo switches incorporate digital signal processing to provide real-time voice compression. PCM voice channels are compressed from 64 Kbps down to 4-6 Kbps then routed to 100BaseT Ethernet ports. Typical gateway products use DSPs for both compression/decompression and echo cancellation. However, Mockingbird says the Nuvo 100 switch uses its DSPs only for compression/decompression, and uses specialized hardware such as those found in traditional voice switches for echo cancellation.

The Nuvo 100 supports up to four T-1 interfaces which provide a direct connection to SSP switching trunks.

Interfacing to the IN also allows the Nuvo switch to support the standard features of SS7, including instantaneous call connection, call detail records (so charges can appear on the customer's standard phone statement), CallerID, call forwarding, and multi-point conferencing.

The Nuvo primary switch, which supports the SS7 hardware, can support up to 99 secondary switches. Pricing for the primary switch starts at $1,500 per port. For more information, contact Mockingbird Networks at (408) 342-1067, or visit their Web site at `www.mockingbirdnet.com`.

CWI TO BUY MCI'S BACKBONE AND ISP SERVICE

Cable & Wireless said May 28 it will buy MCI's Internet backbone service business for $625 million in cash.

The transaction addresses anti-trust issues being examined by the U.S. Department of Justice and the European Commission in the proposed $37billion MCI WorldCom merger. If those authorities approve, MCI and WorldCom hope that their proposed merger could be completed later this summer. The deal with CWI, which really only effects MCI's ISP and corporate customers, would close at the same time.

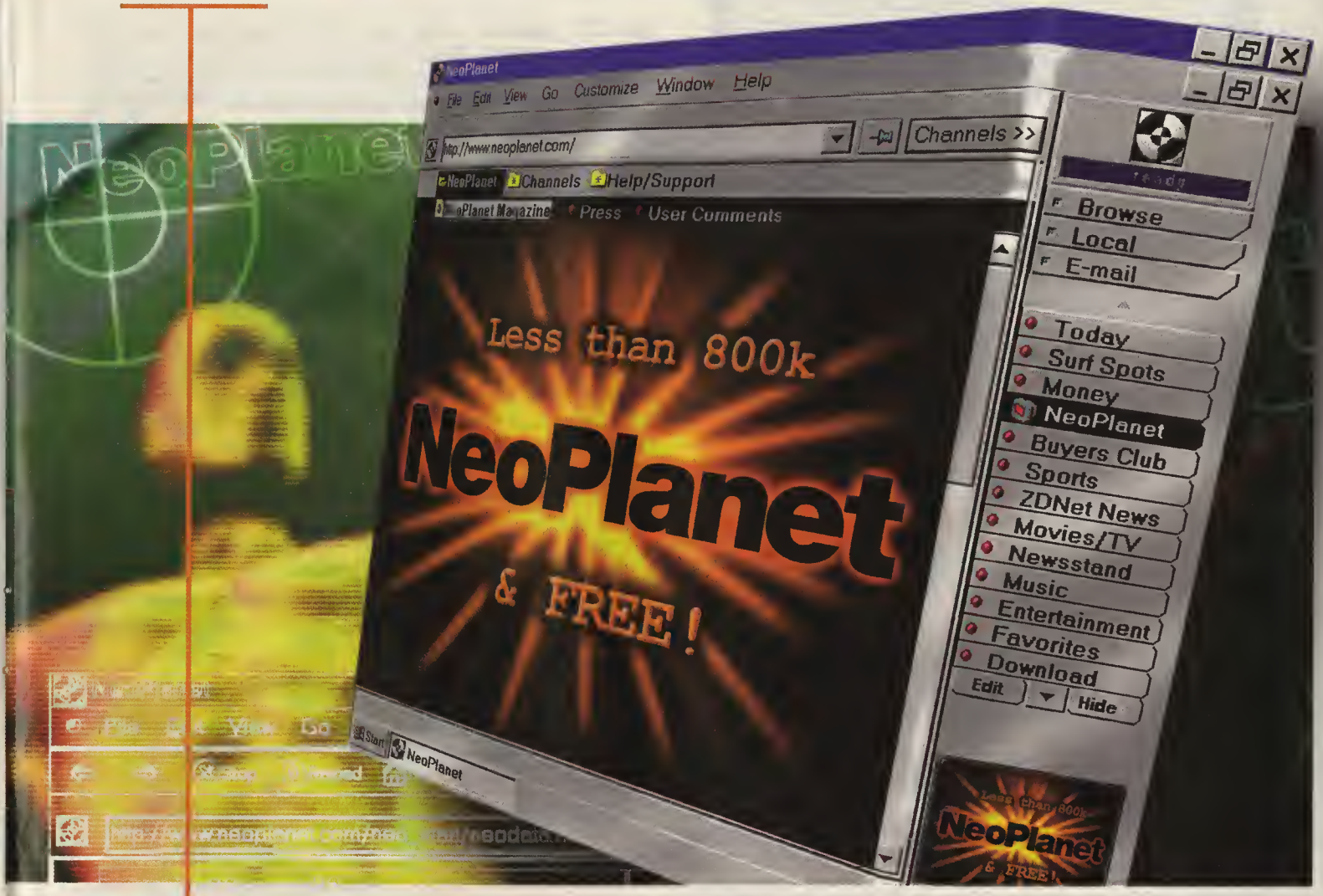
MCI will sell to Cable & Wireless its Internet backbone service business, comprising all of its 22 domestic nodes, 15,000 interconnection ports, more than 40 ongoing peering agreements, and equipment dedicated to supporting the network including routers and switches. These are key pieces of technology that will allow users to access the Internet efficiently.

Cable & Wireless will acquire and assume support for MCI's contracts with its Internet service provider (ISP) customers. Today, MCI has more than 1,300 U.S. domestic and international ISP customers across 76 countries.

The companies said that Cable & Wireless agreed to fulfill all existing contractual arrangements with customers. Initially, MCI will provide the underlying telecommunications transport services supporting the Cable & Wireless backbone and will provide additional services as required by CWI. MCI will use Cable & Wireless' backbone to support its growing base of non-ISP customers.

MCI's residential and non-ISP commercial customers - who are not resellers of Internet services - are not affected by this agreement, and MCI will continue to provide non-Internet services to its ISP customers. Residential and commercial customers will continue to receive MCI services from the same access facilities, under the same terms of their contracts and with support from their existing account teams. For a period of at least two years, underlying Internet services for MCI's existing customers will be provided on the Cable & Wireless network.

NeoPlanet For ISPs



THE BROWSER IS THE PORTAL

NeoPlanet by Bigfoot is...

the browser-based portal service that turns Internet access into a user-friendly online service, branded entirely by you.

Its intuitive, point-and-click channel directory and integrated email client make NeoPlanet a true "Online Service in a Box". Realize additional revenue streams by turning your service into a portal and retaining the most valuable real estate on the Internet. NeoPlanet's integrated Internet directory makes your browser the portal so you can offer consumers the richest, easiest and most integrated online experience possible, all under your brand.

NeoPlanet. Your Online Service In A Box.

For more information on the NeoPlanet ISP Program, go to http://www.neoplanet.com/boardwatch/

LUCENT LICENSES DIGITAL MODEM TECHNOLOGY FROM AWARE, INC.


Company

Press Releases

LUCENT TECHNOLOGIES MICROELECTRONICS GROUP LICENSES DIGITAL MODEM TECHNOLOGY FROM AWARE, INC.

BEDFORD, Mass., April 7, 1998 — Aware, Inc. (NASDAQ: AWRE) today announced a licensing and development agreement with Lucent Technologies Microelectronics Group for a new type of Digital Subscriber Line (DSL) technology that Lucent will incorporate into its DSL chip sets

Under the agreement, Aware will provide Lucent with its DSL-Lite DMT (discrete multitone) technology, which eliminates the need for a voice-data splitter on the customer's side of the connection. This means a service provider can offer this technology to consumers without having to send a technician to customers' homes to install new wiring and a splitter. Financial terms of the agreement were not disclosed.

Lucent Technologies Microelectronics Group (www.lucent.com/micro) announced a licensing and development agreement with a smaller firm, Aware, Inc. Aware (www.aware.com) markets a new type of Digital Subscriber Line (DSL) that Lucent will incorporate into its chip sets.

Under the agreement, Aware will provide Lucent with its DSL-Lite discrete multitone technology, which eliminates the need for a voice-date splitter on the customer's side of the connection. This means a service provider can offer this technology without having to send a technician to customer's homes to install new wiring and a splitter.

Lucent will ship sample chip sets incorporating the technology and software in late summer or early fall. The chip set will be part of Lucent's WildWire offering.

NETWORK SOLUTIONS ACQUIRES GLOBAL REGISTRATION SERVICES COMPANY

Network Solutions, Inc. (NSI) expanded its domain name registration unit by purchasing Internet Domain Names, Inc (idNames). A Houston-based company, idNames specializes in worldwide URL registration services in country code, top level domains (ccTLDs).

NSI estimates that more than 500,000 country code domains were registered in 1997. NSI will now will now provide domain name search and registration services in the 189 countries currently offering registration.

"With the idNames services, Network Solutions will make it easy for companies around the world to build their brand both globally and in local markets," said Gabe Battista, chief executive officer of NSI.

SATELLITE COMPANY EXPANDING SERVICES INTO NIGERIA

PanAmSat (www.panamsat.com) will band together with an African ISP to provide satellite services in Nigeria.

Nigeria's Microcom Systems Ltd will use PanAmSat's global satellite system to offer Internet service that includes transmissions capacity on the PAS-3 Atlantic Ocean Region satellite and access to the U.S. Internet backbone through PanAmSat's teleport in Atlanta, Ga.

Microcom uses a duplex, or two-way, 128 Kbps circuit on PanAmSat's PAS-3 C-band Africa beam. The PAS-3 satellite, launched January 1996, is a Hughes-built HS 601 model satellite.

Other telecommunications providers using PanAmSat satellite services are located in Angola, Ghana, South Africa, Sudan, Tanzania, Togo, Uganda and Zambia.

Microcom offers a 128 Kbps pipe from Nigeria to North America's Internet and plans to upgrade to 256 Kbps on PAS-3.

The Nigerian federal government recently granted Microcom both an operating license and several government contracts. (The Federal Airports Authority of Nigeria and the Nigerian Communications Commission are on Microcom's customer list).

The ISP operates with four SUN Spark servers, 324 Megabytes of RAM, 20 GB of hard drive storage space, Cisco routers and modem access ratios of 10 to 1. Microcom supports corporate intranets and extranets and supplies Web hosting, design and domain name provisioning.

PanAmSat operates a global network of 17 telecom satellites servicing five continents. The company plans to launch seven additional satellites by late 1999.

U.S. GOVERNMENT GRANTS QWEST $430 MILLION CONTRACT

Uncle Sam accepted Qwest's bid to build a virtual private network (VPN) for the federal government. Under the terms of the $430 million, contract, Qwest will provide the government with fiber, hardware, engineering, communications services and network management for the next 10 years.

This communications infrastructure is one of the first custom VPN using all of Qwest's data services. The government VPN utilizes Qwest Macro Capacity (SM) Fiber Network and its TeraPOP (Terabit Points of Presence) system.

The April 27 deal marks the first large government contract secured by Qwest's newly created Government Systems Division.

IDT AND JABRA BUNDLE GOODS FOR HAND-FREE TELEPHONY

IDT Corp. and JABRA Corp. will sell their hardware and software together to provide inexpensive, hands-off phone calls over the Internet. PC users can soon purchase IDT's Net2Phone software bundled with JABRA's headset phone, EarSet.

Net2Phone software initiates calls on a computer and routes them over the Internet to any phone in the world. Since the signal is carried over the Internet until it reaches IDT's U.S.-based phone switches, rates are not dependent upon the country of origin. As a result, users can pay as little as 10 cents a minute for calls to the U.S. from anywhere in the world.

The JABRA EarSet uses a tiny speaker set inside a soft earpiece to channel sound directly into the ear canal. A person speaks into a fixed distance headset microphone.

The Net2Phone software will be bundled in JABRA's retail product package, and will be distributed throughout North America, Latin America, Europe and Asia. The Internet telephony software is free for those purchasing the JABRA EarSet

With Channel Bonding, Why Wait?

Tom Bradford
President, Transend

While not leapfrogging technology, it's leapfrogging the hype

Transend Gemini is a powerful new 112k channel bonded modem. It seamlessly binds two standard dial lines or two two-wire leased lines into a powerhouse that doubles speed and throughput, all over current telephone infrastructure.

Transend Gemini is simple to install. Just "Plug and Play" – no additional system changes and software are required. Transend Gemini relies on a powerful on-board microprocessor that handles all functions transparently. In addition, the modem works on any operating system, and uses only one port and one IP address.

Transend GemIni supports a number of standards, including MLPPP. This means ISP's can implement channel bonding services using their current equipment. However, for times when maximum throughput is needed, Transend Gemini relies on its own patented SACS (Simple Analog Channel Sequencing) bonding technology. Designed to be a powerful point-to-point, dial-up, channel-bonding protocol, SACS delivers near 100 percent efficiency in using available bandwidth, particularly for video applications.

For additional information about Transend, call 800-654-0623.

TRANSEND

Personally, I HATE TO WAIT. For a table at a restaurant, for a ticket to the movies, and for a page to download from the Internet. I especially hate waiting for the proverbial "leapfrogging technology" that is supposed to be faster and easier to use. Take ISDN for example. The technology is finally here, somewhere. But not in my neighborhood. My friends who **could** get it are waiting for prices to become even remotely affordable.

And what about 56k modems that never operate even close to that speed, in *either* direction, all because of those terribly unfair restrictions by the Telcos? Is there an innovative technology that is applicable right **now?**

TA DA..! CHANNEL BONDING.

The answer is yes. Channel bonded modems, which combine the bandwidth of regular telephone lines to achieve more overall bandwidth, offer a cost-effective means to provide faster data access.

SO WHY CHANNEL BONDING?

While channel bonding is not a glamorous, leapfrogging technology, it makes huge strides in throughput, all while using technology we're all already familiar with, good old-fashioned telephone lines. By using existing telephone technology without any changes or new equipment, channel-bonded modems deliver faster point-to-point service, and Internet access without the high costs and headaches associated with ISDN lines and other new technologies. And for everything that's wrong with analog phone lines, they are plentiful, and cheap. Channel bonding can deliver performance in excess of 100K or even 200K.

HOW DOES IT WORK?

Channel-bonded modems combine multiple streams of data into a single session by using SACs, a protocol designed for faster point-to-point connections and/or Multilink PPP (MLPPP), a software standard that connects multiple modem calls across a remote access server.

Channel-bonded modems are the perfect answer for companies that don't want to wait for high-speed access to the Internet. And they are also likely to find a secure niche for high-speed telecommuting and remote office access, particularly in areas where the telecommunications infrastructure doesn't support digital technologies.

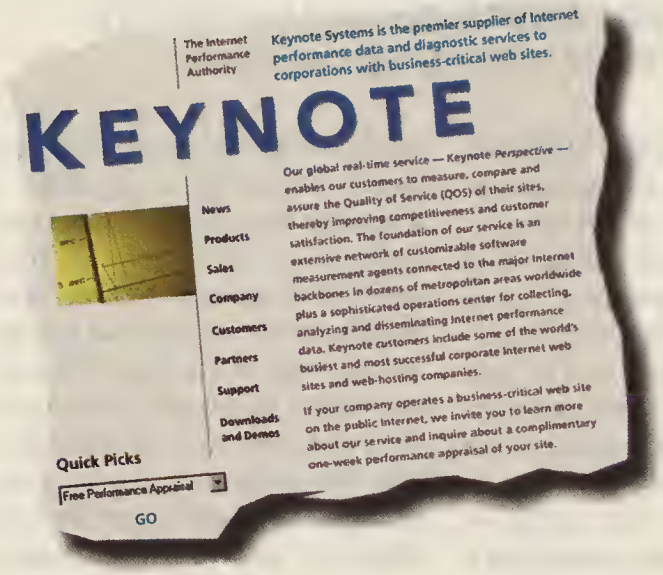
http://www.transendmodems.com

for PC. The bundled package will be available by the early summer of 1998.

The EarSet sells for **$49.95**. For more information on the EarSet, contact JABRA at (800) 327-2230, or visit its Web site at `www.jabra.com`.

For more information on IDT's Net2Phone service, call (201) 928-1000, or visit the Net2Phone Web site at `www.net2phone.com`.

HP, KEYNOTE TEAM UP TO MEASURE INTERNET PERFORMANCE



Hewlett-Packard and Keynote Systems agreed to integrate Internet performance data from Keynote in HP OpenView Firehunter, an ISP service management product. Keynote's Perspective service measures the global performance and accessibility of Web sites from agents situated around the world. HP's Firehunter is a Web-based, network monitoring product designed for real-time tracking and management of ISP services, including mail, news and Web. ISPs using HP's Firehunter equipped with Keynote software can view a real-time picture of performance of selected Web-hosting services and equipment.

HP Firehunter data and Keynote's Internet measurements are integrated to correlate and analyze performance information automatically and to pinpoint problem origins so ISPs can detect and resolve problems quickly.

The HP Firehunter currently sells for **$14,950**. Debbie Madden, an outbound marketing program manager for HP, said the addition of the Keynote software component in Firehunter will not raise its price.

MULTI-TECH SYSTEMS RELEASES 56 Kbps DSVD MODEM

Multi-Tech Systems, inc., a data communications technology company announced the release of its 56 Kbps Digital Simultaneous Voice and Data (DSVD) modem. The MultiModemDSVD allows both voice and data communications over plain telephone lines. The modem is targeted to corporate and small office/home office (SOHO) users.

The MultiModemDSVD, a K56flex data/voice modem, is fully compliant with the ITU V.70 DSVD standard and will be upgraded free to the pending ITU V.90 standard for 56 Kbps data communications.

The Multi-Tech modem used K56flex speeds when connected to a fully digital K56flex server, and operates at 33.6 Kbps when connected to another client modem. The modem will operate in simultaneous voice and data mode when connected to another V.70 compliant modem.

When used for voice operation, the modem features call-back security, telephone answering machine operation, CallerID reporting, speed conversion, four-number storage for automatic dialing, and remote configuration. Flash memory is also included for data pumps and controller software updates. The DSVD modem supports industry-standard IS-101 AT+V commands for voice control, provides concurrent DTMF tone detection and silent detection to allow the modem to to be used as a remote or local answering machine. Any industry-standard software can be used.

When used for facsimile operation, the modem operates with any Class 1 or 2 fax modem software, and supports V.17 fax operation and Group 3 faxing via Class 2 commands.

Included with the modem is Trio Communications Suite 5.1 software, which provides telephone answering and fax machine capabilities, an answering service with multiple mailboxes, remote administration, and CallerID.

The modem's street price is **$179**. For more information on Multi-Tech and the MultiModemDSVD modem, contact Multi-Tech at (800) 328-9717, or visit its Web site at `www.multitech.com`.

NETOPIA SHIPS NEW INTERNET ROUTER WITH DUAL ANALOG

Netopia, Inc. announced the release of its Internet router with dual analog, featuring the SmartStart Wizard. The Netopia router (`www.netopia.com/hardware/dialup/dual_analog.html`) aggregates three compatible 56 Kbps modems to provide users with up to 168 Kbps bandwidth of shared, on-demand Internet access over standard telephone lines. The router also features Netopia's SmartStart Wizard, which allows users to setup the router without ever entering an IP address.

The router has an eight-port hub, and uses standard analog Multilink PPP to aggregate 56 Kbps analog modem connections. The modem supports the new ITU V.90 standard and K56flex technology. The router also includes an auxiliary serial port to attach external modem for up to three simultaneous connections.

The router can be set to bring one, two, or three modem connections up and down, depending on user demand. Similarly, a two or threeline connection will drop to a one or two line connection when a user starts a call using an attached telephone or facsimile machine.

Netopia said the SmartStart Wizard makes the Netopia Internet Router the first auto-configuring router on the market. Users can setup the router by connecting their desktop

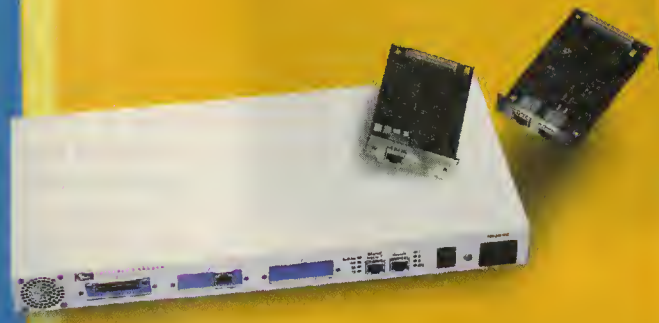
Stressed about your next router?

When you thought everything was finally working, they decided to add another network to the mix. Is the router going to keep up with the additional load?

The **Cyclades®-PR3000**, a midrange router, has the spare power to handle your current and future needs. Interfaces can be changed as fast as the needs of your users.

The best thing about it is that it doesn't cost more than what is currently in the market.

Now you know what to do.



The **Cyclades-PR3000** an expandable, midrange router.

Cyclades-PR3000

The **Cyclades-PR3000** uses the new Matarala MPCB60 processor to deliver unrivaled power performance and offer flexibility that let you change or add new interfaces as they are needed. It comes with 8 MB of DRAM (expandable to 64 MB) and 2/4 MB of Flash Memory.

The **Cyclades-PR3000** has one LAN Interface and 3 Expansion Slots where you can install any combination of:

- Serial WAN Interface (V.35, RS-232 and X.21)
- Built-in DSU/CSU (T1, E1)
- ISDN-BRI
- Terminal Server Interface
  (up to 64 RS-232 ports for Remote Access)

It routes **TCP/IP**, **IPX** and **SNA** (Q2 9B) and also supports RIP, OSPF, NAT, RADIUS, TACACS, PPP, Frame Relay, and X.25.

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machine to one of the routers Ethernet ports, connecting two phone lines to each of the color coded telco ports, and running the SmartStart Wizard CD-ROM. After answering a few questions, the wizard collects all of the information necessary to configure the router. When the wizard finishes, it posts the configuration to the router and tests the connection. After that, the users need only connect their LAN.

"With the SmartStart Wizard, configuration is as easy as 'Next, Next, Finished'," said Michael Heylin, a senior associate in creative strategies. "LAN customers can now get setup without so much as a tech call, thereby greatly reducing ISP support costs."

The Netopia Internet Router with Dual Analog was shipped in May with an estimated street price between $649 and $699. Netopia will provide any necessary cables, software and services for installation.

EQUIPMENT VENDORS FORM IMA INTEROPERABILITY INITIATIVE

Some of the largest wide area network (WAN) access equipment vendors announced May 20 the formation of the industry's first inverse multiplexing for ATM (IMA) Interoperability Initiative (I3). The initiative is designed to advance the adoption of the ATM Forum IMA standard through multi-vendor lab testing with verification and IMA technical and market education programs.

Founding members of the I3 program include WAN access vendors Larscom, Sentient Networks and 3Com. Other vendors who have joined are Ascend, Digital Link, Nortel and Sonoma Systems. Additional vendors as well as carriers have also expressed interest in joining the Initiative, said Nimish Shah, CTO and vice president of business development of Sentient Networks, which has spearheaded the formation of the I3 program.

The I3 program hopes to expedite the adoption of the IMA standard using multiple T-1 (1.544 Mbps) lines and give users a cost-effective and scalable alternative to expensive T-3 (45 Mbps) services and proprietary inverse multiplexing technologies, Shah said. "The goal is to take down the barriers to interoperability," and give every player in the industry a chance to take advantage of the quick growth expected.

I3 has been instrumental in the successful interoperability testing between Sentient, Larscom and Digital Link products. Full-scale interoperability testing among all the participating vendors was scheduled to begin in late-May at Sentient's headquarters in Milpitas, California.

I3 interoperability lab testing offers carriers and service providers a significant time-to-market advantage. By verifying interoperability between multiple equipment vendors in the I3 labs, ISPs will be able to respond to customers bandwidth needs quickly and effectively, Shah said. A cooperative effort and standard is critical to the success of inverse multiplexing of ATM in a broad market.

Through interoperability events, marketing programs and application showcases the I3 hopes to increase customer confidence in the technology and market acceptance. I3 has defined a test specification to ensure increased interoperability between products and services from different companies. To be certified as interoperable, vendors' equipment must pass all the tests and exchange information with other vendors.

In the future, I3 plans to undertake periodic interoperability between participating members to ensure that all the IMA products and services conform to the ATM Forum technical committee specification on IMA version 1.0.

Shah said a dedicated T-3 connection is often too expensive for a company to justify because rarely do they need the full pipe, but a T-1 does not provide sufficient bandwidth. The problem will become bigger with the future-applications predicted for data, voice and video. In addition, T3 service is often not readily available. IMA provides a cost-effective and scalable alternative to T-3 by allowing service providers to leverage widely available T-1 services over ATM and interoperate with other vendors' standards-based equipment.

For more information on interoperable products and services based on ATM Forum- compliant IMA, as well as additional I3 marketing program information, visit the I3 Web site at `www.go-ima.com`. Companies interested in participating in the I3 program and submitting products for interoperability testing in the verification lab should contact Mihir Mohanty, chairman of the I3 alliance, at Sentient Networks at (408) 473-8032 or by e-mail at `mohanty@sentientnet.com`.

MOVINCOOL ANNOUNCES SPOT COOLER SPECIFICALLY FOR COMPUTER ENVIRONMENT

MovinCool, a division of DENSO Sales California, Inc., announced their next generation series of portable air conditioning units, the Office Pro Series. The first product in the series, the Office Pro 12, is due to be shipped in August 1998.

Current MovinCool spot coolers are used in computer rooms, but the Office Pro Series is the first spot cooling product designed specifically for computer and office environments, according to MovinCool. The Office Pro Series is designed for environments that require low ambient temperatures (60-90 degrees Fahrenheit) to cool computers and workers.

MovinCool says its spot coolers are less than half the cost of a central air conditioning system, with the Office Pro 12 providing cooling for less than 25 cents an hour.

Installation is inexpensive; just roll it in, plug it in, and turn it on. The Office Pro 12 plugs into any standard 115v outlet.

The Office Pro 12 features a cooling capacity of 12,000 Btus per hour, a 10 foot power cord, and a four gallon condensation tank.

THERE ARE ENOUGH COMPLEXITIES IN LIFE. CONNECTING TO THE INTERNET SHOULDN'T BE ONE OF THEM.

Creating an Internet presence can be a frustrating experience, even for the expert. Beyond the web server there are routers to make the connections, FTP to move the files, and e-mail servers to give your mail a home. And don't forget the Domain Name Server that's required so the world can know your name. Even after you gather all the pieces, you still have to integrate them. And the costs, in time and money, can be staggering. But now there is an easier way.

THE INTERNET PRESENCE IN A BOX

The Internet Protocol Adapter (IPAD) is the only product that fully integrates a router, terminal server, and core Internet services (e-mail, DNS, unlimited WWW and FTP servers) into a single device. With all the necessary internal and external connections, Domain Name Service, and other required functions, the IPAD includes everything you need to easily establish a complete Internet presence. In fact, it's so complete, you can add remote access by simply plugging in modems and dialing in with any Internet compatible computer.

BUILT WITH PERFORMANCE AND DURABILITY IN MIND

The IPAD's capability is housed in a rack-mount chassis of battle-ready construction. Its custom software, optimized for the Pentium processor, yields an unprecedented combination of performance and durability that you can never get from a general purpose operating system. The IPAD may be easy to use, but it's no toy.

	IPAD	Windows NT
Computer Hardware for Server CPU	Comparable performance $746S	166 Mhz Pentium, 2 GIG SCSI Disk, Ethernet, Caching Controller 96 MB RAM, $3500
Router Software Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	$1800 1-3 hrs $70 Avg $1870
System Software O/S Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	$895 5-30 hrs $61S Avg $1510
Web Server Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	Included 3-2S hrs $490 Avg $490
FTP Server Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	Included 1-2 hrs $50 Avg $S0
DNS Server Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	$495 5-80 hrs $1600 Avg $2095
E-Mail Server Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	$S80 10-100 hrs $1900 Avg $2480
Support Costs Per Year	$795 Includes Hardware and Software Protection	$2100 No Hardware or Software Protection
Number of Vendors	1	S
Total Cost	$8260	$13,600
Time from receipt to fully operational site	2 Days	120 Days

PLUG 'N PLAY AND WALK AWAY

Many products claim to be easy to use, but the proof is in the time you spend getting it up and running. With other products you have to *learn everything* before you can *do anything*, and with the Internet there's a lot to learn. Only the IPAD allows you to get started immediately, and learn as you go. Information Week said of the IPAD "*from box to working system in two hours even with mistakes.*"

And this ease of use doesn't stop there. With an IPAD even those without formal Internet training can confidently grow and maintain their own network.

GO WITH A WINNER!

InfoWorld Magazine said *"The IPAD represents an elegant solution when you need to easily build an Internet or intranet presence. Considering the time it saves you, the price represents a good value."* In 1995 John C. Dvorak gave the IPAD his PC Telecommunications Excellence Award because he recognized the IPAD advantage.

DON'T WASTE ANY MORE OF YOUR TIME!

You want your Internet Presence up and running quickly without a long learning curve or sacrificing flexibility and power. Now you can have it! The IPAD is the *only* TCP/IP appliance that lets you *start immediately* and grow your site smoothly without forcing you to become an Internet expert(or hire one).

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The Office Pro 12 weighs 175 pounds and measures 27 x 19 x 45 inches.

Movin Cool says all of their spot cooling products have acrylic resin coils and thermostatic controls for longevity. A unit can be customized using a variety of ducts and accessories.

The Office Pro Series include programmable electronic clocks for automated evening and weekend operation, digital temperature controls, and automatic shutoff if the condensation tank is close to overflowing.

The Office Pro 12 will retail for **$3,295.** For more information, contact MovinCool at (800) 264-9573.

INTEL APPLIES ATM TECHNOLOGY TO ETHERNET

Chip maker Intel (`www.intel.com`) allied with Fore Systems, a company specializing in asynchronous transfer mode (ATM), to combine Intel's Ethernet switching technology and Fore's ATM technology. The agreement between the companies includes joint development of products which incorporate the technologies, and some joint marketing and sales efforts.

The first product of the alliance is the ES-2810 switch, which incorporates Intel's Fast Ethernet switching technology. Fore (`www.fore.com`) says the new product, which was scheduled for release in June, will help Net users prioritize traffic and help reduce operational costs by consolidating voice, video and data.

The ES-2810 features 24 10/100 TX ports, and is expandable 32 ports. The switch is also scalable to 196 Fast Ethernet switch ports.

"Enterprise customers should not be forced to choose between Ethernet and ATM when what they really need are both," said Frank Gill, Intel executive vice president and general manager of Intel's small business and networking group.

The switch sells for **$3,695**, For more information, contact Fore Systems at 888-404-0444, or visit the ES-2810 Web site at `www.fore.com/products/es/es2810.html`.

CISCO INTRODUCES NEXT WAVE OF ETHERNET EQUIPMENT

Router and equipment manufacturer Cisco Systems unveiled its new line of high-density Ethernet switches in April. The new product line, the Catalyst 8500 series, delivers upgraded gigabit speeds through high-density Ethernet switches.

Cisco released the new Catalyst 8510 Campus Switch Router model in June. The 8510 uses Fast EtherChannel technology The 8510 has a five-slot chassis and fan tray, and features a 10 Gbps shared memory, non-blocking fabric, 8 MB of Flash memory (expandable to 16 MB, plus up to 20 MB through PC Flash cards), 32 MB DRAM system memory, an Ethernet port, and dual EIA/TIA-232 serial ports. The 8510 router can achieve an aggregate throughput of 6 million packets per second (PPS) for both Layer 2 and Layer 3 switching. The 8510 starts at **$24,995**.

The Catalyst 8540 Campus Switch Router, due to be released in has a thirteen-slot chassis and fan tray, and features), 64 MB DRAMa 40 Gbps shared memory, non-blocking Switch Processor fabric, 8 MB of Flash memory (expandable to 16 MB, plus up to 20 MB through PC Flash cards system memory, an Ethernet port, and dual EIA/TIA-232 serial ports. The 8540 router can achieve an aggregate throughput of 24 million pps. These data rates apply not only to IP and IPX traffic but also to IP multicast and bridged traffic, and are a result of using high-speed application specific integrated circuit (ASIC) technology on each line card to perform Layer 3 routing.

The price for the 8540 will be disclosed 30-60 days prior to the ship date, which is scheduled in September. ◆

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TECHNOLOGY FRONT

by Jim Thompson
Western News Service

ATTACKING VIRUSES — WITH A LITTLE HELP FROM MY FRIENDS

My recent experience with a computer virus infection seems to have stuck a cord among many ***Boardwatch*** readers. I received a flood of email offering not only sympathy, but also suggestions on what to do if it ever happens again. All of the messages were from nice folks who are probably far more knowledgeable than I when it comes to dealing with viruses.

Jim Thompson is managing editor of Western News Service in Los Angeles, California. He receives mail at jim.thompson@wnsnews.com

(NOTE: The original article titled, "Infection! My Trip to Virus Hell and Back" can be found in the April, 1998 issue of ***Boardwatch Magazine***).

The mail I received offers so much helpful information that I felt it was my duty to pass along this knowledge to all the readers of ***Boardwatch***.

Let's start first with the important stuff — tips on dealing with a virus after it hits.

BOOT RECORD VIRUS FIX

Greg Panula was kind enough to take the time to send this suggestion when dealing with a virus that attacks the boot sector:

Here is a quick fix for Boot Record viruses of Microsoft Operating Systems' DOS through Win95: You need a clean write-protected boot diskette with `FDISK.SYS` and `FORMAT` (just in case) on it. Boot your machine from that diskette. Then run `FDISK/MBR` from the diskette. Then run `SYS <boot drive>` (example `SYS C:`). Then rename the `AUTOEXEC.BAT` and `CONFIG.SYS` files on the boot drive. Remove the boot diskette and cold-boot your machine.

The command `FDISK/MBR` rebuilds the Master Boot record. The `SYS` command copies the system files from the boot diskette onto the boot drive. Renaming the `AUTOEXEC.BAT` and `CONFIG.SYS` will keep those files from loading any virus-infected files. Renaming won't help much in a Win95 environment. It is best to clean the drive completely before booting from the infected drive.

It is a handy trick, and will get the hard drive back up and give you a virus clean boot. Then you just have to remove the viruses from infected files.

It is a good idea to have a clean boot diskette with a virus checker that you can run from a DOS prompt. In this age of Windows it is a little more difficult to produce. But I know McAfee can be run from a DOS prompt, you just have to pick out the needed files (`SCAN.EXE` and the virus definitions file). It should all fit on a single diskette (virus scanner, `FDISK`, `FORMAT`, `SYS`). Remember to write protect the disk. I have had to go and clean-up after a virus removal team, after they infected more machines because they didn't write protect their "cleaning" disks.

YOU CAN'T BE TOO CAREFUL

Joe Urbanovitch from magi.net offers this solution:

I am the founder of a local Web hosting company, MAGI inc., (`www.magi.net`), who also does networks for businesses. I am the hardware guy, and I have, out of necessity, learned a bit about virii. I have downloaded several thousand of them, exposed PCs to them, then learned how to recognize them, remove them, and recover from them. I have been dealing with virii (successfully) (knock on wood) here at MAGI (maybe 30 PCs), at home (five) and for our Web site and network clients.

I am militaristic in the procedures I use to handle virii, usually removing the hard drive and installing it as `D:` on a machine with a different OS (most Win95 virii won't work on NT and vice-versa) and what prompted me to write you is it seems that you broke several of my rules <smile> but got lucky anyway.

My biggest concern is that you didn't mention a few possible symptoms and facts. I wonder if, as part of your experience, did you ever get messages to run scan disk, and if you did, did sectors get found bad? Some stealth virii (common) disguise themselves as bad sectors with a cloud, and can be particularly hard to remove. Also, you mentioned that you were told that you have to open a program to run a virus; well, sometimes, but remember, opening `A:` is running any program installed in the header of the floppy! Booting an OS is running the boot programs, which many virii contaminate.

Downloading stuff from the Internet is a source of virii, but the leading cause that I have been seeing, is using floppies between machines. I hope you have treated ALL exposed floppies, hard drives, and motherboards (memory resident virii) as possibly contaminated, so you don't inadvertently reinfect yourself. Also, many virii have time bombs, and don't show up with anti-virus software till after they are set off. The worst one I dealt with wasn't set off until you got a blue screen of death in Windows from some other application. Then it started removing files from the

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boot sector of the hard drive, and was simultaneously memory resident, so even a new hard drive and OS wouldn't cure it.

My point being that don't be lulled into complacency just because it appears that you have removed your virus — boy can I tell you some horror stories. lol.

Wise words, indeed from someone who really knows his stuff!

UPDATE YOUR VIRUS SCANNING SOFTWARE

Dan S. Tong from Tong Consulting is another one who has successfully battled various strains of viruses. He offers this sage advice:

There are two things that you either did not do, or omitted from, your extremely well written saga of your virus experience:

1. This is the single most important step: Always have a CLEAN DOS boot disk (write protected) to boot your system from. For those people using Windows 95 version B (also known as release 2 etc.) with `FAT32`, you must have a DOS `FAT32` boot disk (write protected). These emergency boot disks must be prepared ahead of time and should have CD-ROM and other drivers in place and tested, so you can not only boot your hard drive but also be able to access any and all of your other devices which require special drivers in `CONFIG.SYS` and `AUTOEXEC.BAT`.

2. If you just bought an anti-virus program—expect to have the virus data list be three to 10 months out of date. Programs sit in warehouses and are OLD. You really need to get the latest virus data list, using someone else's machine and Internet access if your only machine is inoperable/infected. If you do not have the latest virus data list, you may not detect/remove the newest viruses.

One final word: Have all original or important floppies WRITE PROTECTED.

BEWARE THE FLOPPY

Mike Challis offers this prospective:

Be careful when you share floppy disks! My old Gateway computer that I sold to a friend got a virus, and it ruined all the files. It was the Ripper virus. They have teenagers who trade floppies with programs on them. The Ripper virus can hide on a floppy disk. If you boot the computer with the disk in, the computer will get infected.

This virus was sneaky. It survived a `FDISK/FORMAT/REINSTALL` sequence. I had to use `FORMAT/MBR` (Master Boot Record) to finally get rid of it.

I have an anti-virus program and I scan all downloaded files. When I install floppies on someone's computer I switch the write protect window so a virus can not get on my floppy.

I have a bootable anti-virus scan floppy and from now on whenever I work on someone's computer, I am going to scan it first.

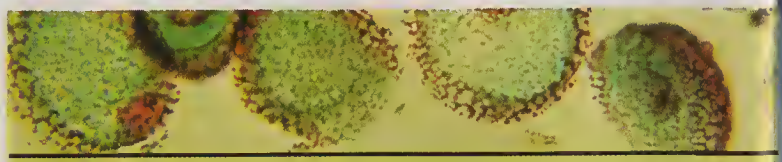
Note: Ripper is a virus that randomly corrupts disk writes when active in memory. Approximately one in every 1,000 disk writes is affected, making the information written invalid. The virus contains two encrypted strings. One is a profane message. The other reads as follows: (C) 1992 Jack Ripper.

SIMPLE CAN BE BETTER

Arnold Vagts, Ph.D. sent this suggestion:

I've been telling my associates for YEARS that I do NOT accept e-mailed Word documents because of virus danger in macros. I use an ASCII editor. After all, we don't need pretty print in e-mail—just plain ASCII text, which, I believe can't infect by viewing since there are no macros or "executables." This may change, but it is as safe as you can get and still communicate. My contacts think I'm paranoid. Maybe, but experiences like yours definitely reinforce my paranoia (a little "p" is healthy).

Mr. Vagts also sent along the name and address of an authority in the area of viruses. I will contact him and pass along any pearls of wisdom that may be helpful.



A computer virus is defined as a program (or, more properly, a program fragment), which reproduces itself. Most viruses are designed to do this as unobtrusively as possible, in order to spread as far as possible. Therefore, most viruses are not designed to do damage, and most successful viruses are not destructive.

VIRUSES AREN'T ALL BAD

Dean Cochrane offered some excellent advice but added his doubts that what I experienced was even a virus. He wrote:

Your article contains some misconceptions that I think need to be addressed.

First, I think that it is a very common misconception that viruses are "Things Which Do Bad Things To Computers." Viruses are not well understood, even among otherwise technically savvy people, and there is a lot of "common knowledge" surrounding them that is simply wrong.

A computer virus is defined as a program (or, more properly, a program fragment), which reproduces itself. Most viruses are designed to do this as unobtrusively as possible, in order to spread as far as possible. Therefore, most viruses are not designed to do damage, and most successful viruses are not destructive.

After all, if you are trying to design a virus that will spread to as many systems as possible, having it cause damage is highly counter-productive. Most people don't know this, and missing files and odd behavior are quite often blamed on viruses. In my three years of dealing with virus invasions on 1,100 machines, I did not encounter a single instance where a virus caused any damage other than lost time.

Second, I'm 99.something percent sure that your problem wasn't a virus. Viruses, even destructive ones, just don't cause (and can't

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cause) that kind of trouble. If I had to guess, I'd bet that your drive controller went west. I've seen it before. I think the fact that you found a couple of infected files on the drive was a coincidence, particularly since neither virus you mention is destructive.

Third, you imply in your article that the virus could have "infected the CMOS and lord knows what other hardware areas of the machine." This is, generally speaking, not possible. Some recent hardware has software updateable ROM in it, but using it to propagate a virus would present some formidable programming challenges, if it is even possible at all.

On the general subject of viruses damaging/infecting hardware, I don't completely discount that it might be possible under certain highly unusual circumstances, but I frankly think that the probability is vanishingly small.

I would like to suggest that you spend some time reading `alt.comp.virus`. It can be very informative.

This message really got me thinking. Maybe what I had was not a virus. I make no secret of the fact that I am not an expert in the virus arena—just a poor slub who was infected and suffered the consequences. What I know about virus infection comes from necessity.

In truth, the first thing I did (but failed to mention in the original article) was to move the hard drive to another computer (and consequently attach it to another drive controller). The result was the same. In fact, things got worse on the new machine. I could be wrong, but there is no doubt in my mind (as confused as it sometime is) that I had a virus and that is what caused the problems. I do, however, acknowledge that Dean knows far more about this area than I may ever know. I did take his comments to heart and I appreciate him taking the time to give me the benefit of his experience. Thanks, Dean.

LEAVE NOTHING TO CHANCE

Patrick V. McNamara, a real veteran of the virus wars sent these suggestions:

I can relate quite well with your hardships encountered with containing viruses located on your system. I was a customer service engineer with a world-wide service organization for nearly 19 years. In recent years, while maintaining PCs for well known corporate organizations, I encountered virus infected systems on numerous occasions. Many times, the symptoms originally appeared to be hard drive problems or CPU driven problems. I know of many engineers who changed a motherboard or hard drive to cure a virus problem—never aware that they had encountered a virus problem (including myself!!).

From those hard learned lessons I came up with what I considered the best way to identify and correct virus related problems:

1) From a system—known to be free of any virus—create a bootable DOS disk (or Windows 95 safe disk—but you may have problems with enough space for a virus program unless you use a Zip drive or the like.).

2) On that disk place a well recognized virus checker. Use one that allows monthly updates of virus definitions.

3) Normally, there is not enough room on the first disk, so make a second bootable disk containing essential DOS boot programs—`FORMAT`, `CHKDSK`, `EDIT`, `SYS.COM`, `FDISK`, etc.

4) Write protect these disks—never unprotect them unless updating or adding/replacing an essential file.

5) Routinely use the virus boot disk to check your systems—keep virus definitions updated regularly.

The reason for the boot disk from DOS is that booting a system under normal operation will cause some viruses to load into memory—I had yet to see any virus checker clean a booted system that has a virus loaded in memory or that has infected the boot sector of a hard drive. Some vendors profess their virus checkers will clean all viruses—even when the system is booted and is running under normal operation. Don't believe it!!

Many times I have seen a virus checker state a virus has been found and corrected when it is not so—and I ran into the same problems you encountered. Many of the newer viruses lie in the boot sector of the hard drive and can only be eliminated safely by booting from a write protected floppy and running the anti-virus software.

I have used most all virus checkers and always encountered what you did. Not one checker seems to clear all viruses at one time. I use Norton's AntiVirus on most occasions.

Again, routinely check your systems by booting from the floppy drive you created and then run your virus scanner. And only unprotect the virus checker disk when updating or adding/changing files. Always virus check files to be placed on the floppy before and after activation of a given file and before placing it on the virus bootable floppy. Normally, viruses become active only after a given infected file has been activated.

Thanks Patrick, I only wish I knew you before I found the virus.

VIRUS SCANNERS

Along with these suggestions and comments, I received several suggestions to look at virus scanners. Diana I. Gil-Osorio said I should check out @Backup, an online backup and virus detection service. "@Backup is the fastest-growing, best-funded, highest capacity and most secure online backup service on the market," said Diana. "With its fully automated scheduling software, 'munitions grade' 56-bit data DES encryption and practically unlimited scalability, @Backup provides an unmatched level of data security and convenience." She continued: "The service's built-in virus scanning also protects users from one of the fastest growing causes of data loss. What's more, @Backup just closed a $9 million funding round, and signed marketing agreements with American Express, Toshiba and Cendant Corporation."

Keith R. Pillow, a public relations specialist for Quarterdeck Corporation, offered to let me look at ViruSweep Extra Strength. Keith assures me that it one of the best virus scanners on the market.

Murthy (no further identification) said I ". . .should have a look at F-Secure, the latest anti-virus software, which actually puts together two anti-virus engines into one (F-Prot and AntiVirus ToolKit)."

Bill Hill writes, "It's a shame that you didn't know of the tool I'm about to bring to your attention prior to your virus attack (and I'm shocked that it wasn't mentioned in your article and listed in the resource reference). Nonetheless, you shall have

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"The concept is strong, we all know that," said R. Collie King, president of ntr.net. "And I'm all for anything that will speed up access in Louisville. But King said he would first like to see a different structure to the Louisville NAP and see it run by an independent organization rather than one of his competitors.

"If 10 percent of your bandwidth can stay off your lines and go local, that's a good thing," King said. But he added that he would prefer to see the sharing system created as a private entity with all of the participants sharing the support load.

IgLou network manager Dannie Gregorie takes a similar view. "If we're going to have a NAP, it has to be founded from the ground up with funding from the members," he said.

Gregorie said about 12 percent to 13 percent of IgLou's traffic is between local servers and that most of it is exchanged 125 miles away, where most of Louisville's larger ISPs plug into UUNET. Peering in Louisville would have little direct impact on the speed of most local connections. "There is just not really any business demand for it," he said.

Two of Louisville's smaller ISPs have different opinions about the NAP. Mark Kinney, president of KAnet Internet services, said plugging into the NAP would only benefit Win.Net. "Don't get me wrong, I think the idea is great. But you must have all major ISP's involved, not one," he said.

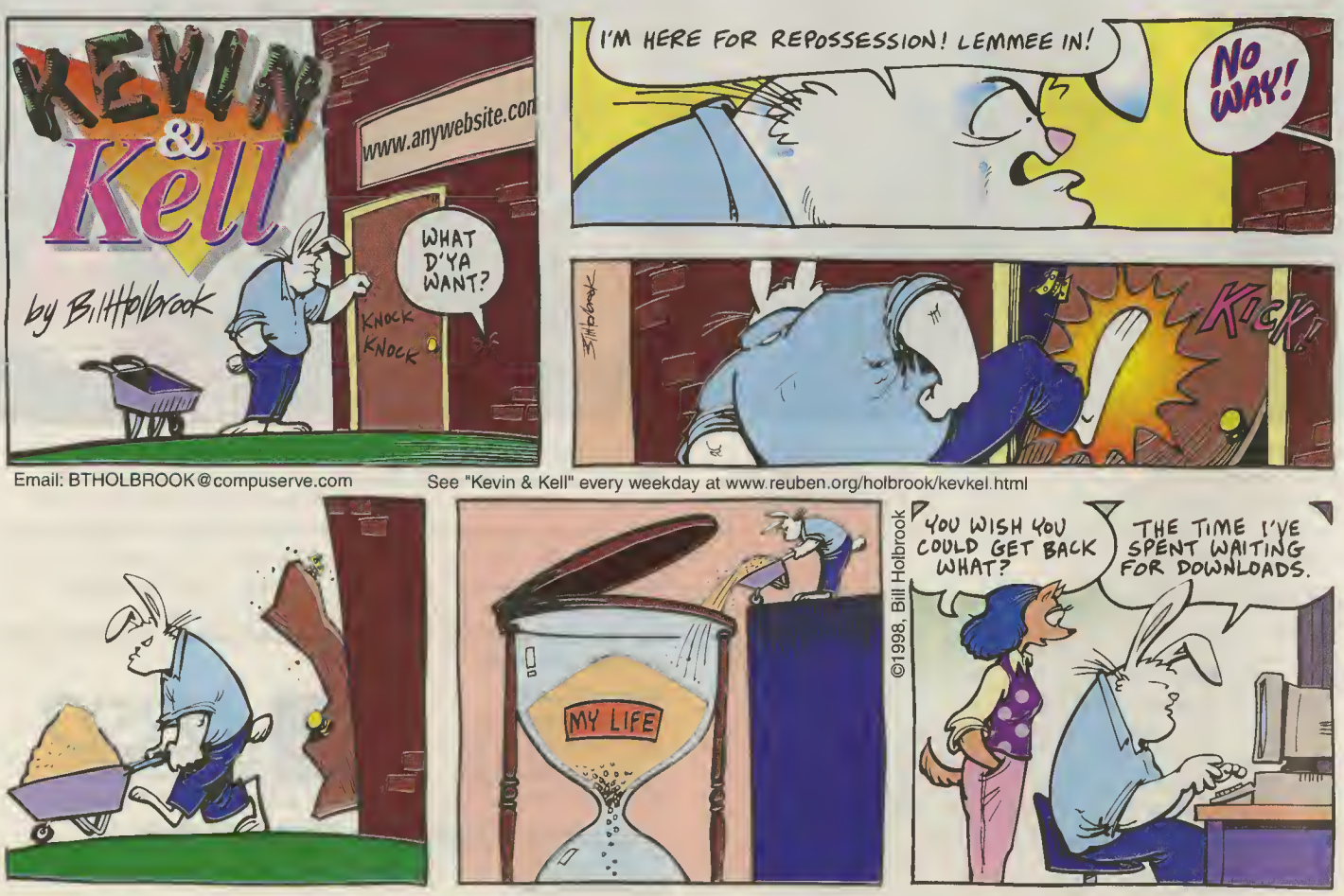
But Eric Paul, who runs AyeNet, said he will probably use the NAP, even though very little of his traffic would benefit from a local peering service. "Eighty percent of our network traffic is http," he said. "Of that traffic, 95 percent is bound for sites not located here in town . . . if you're looking for immediate benefit, then there's very little."

Nevertheless, Paul said Win.Net's peering plan could pay long-term benefits, especially if the NAP could get volume providers, like UUNET and MCI, to also play. "It could provide a city network, which all kinds of public services could plug into as well. The concept of a city "Intranet," so-to-speak, could be a big benefit to all of us."

Win.Net's Tague said he has no strong disagreements with any of the points raised by the other ISPs. No, there is no immediate demand for local peering and yes, the NAP would be more attractive if it was run by an independent body and if all the big players were involved.

"Peering is a very touchy subject and very political," he said. And until everyone is willing to sing from the same page, Tague thinks the Louisville NAP idea is worth pursuing.

"Peering is something ISP's talk about all of the time, but do not often seem to get around to doing," he said. "If you want everyone in your community to hook up you are going to have to work at it. I think it will turn out well for us and for our city as well." ◆



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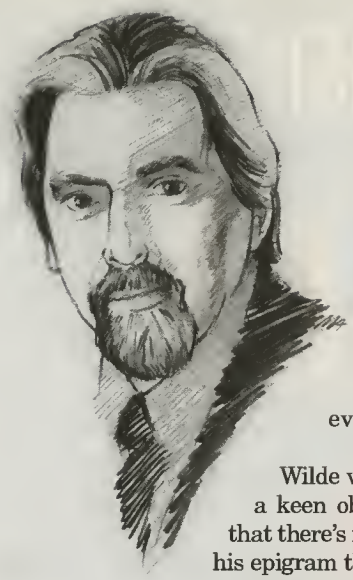

@INTERNET by Thom Stark

FOR WHAT IT'S WORTH

Oscar Wilde once observed, "A cynic is a man who knows the price of everything and the value of nothing."

Wilde was not only a razor-edged wit, he was also a keen observer of human nature. It seems to me that there's no better modern illustration of the truth of his epigram than the computer software marketplace — more specifically, the Internet software marketplace.

Thom Stark is president of STARK REALITIES, a consulting firm based in the San Francisco Bay Area, which specializes in integrating Internet-native technologies into existing business networks. He also conducts seminars and tutorials about the Internet at trade shows and for business and user groups. He is the author of the serialized online science fiction novel, "*A Season in Methven*", (`www.starkrealities.com/Methven/`). Mr. Stark maintains a non-commercial web site that focuses on IP internetworking technology and policy issues at `www.starkrealities.com` and his e-mail address is `thom@starkrealities.com`.

Back in the 1960s, IBM, DEC and others created and sold commercial, shrink-wrapped software to business, government and other entities that required a high level of support and accountability — and which were willing to pay handsomely for it. Their business model survived and thrived through the 1970s — when it was still confined to mainframes and minicomputers - and into the 1980s and 90s, when the personal computer revolution created a gargantuan global marketplace for all kinds of software.

Meanwhile, begining in the 1970s, the ARPAnet - predecessor to the Internet — was created largely based on freeware. Many of its most fundamental services — *sendmail*, *BIND* and *DNS*, the TCP/IP protocol, *FTP*, *Gopher* and its successor the World Wide Web and many more — were created and lovingly maintained by computer scientists whose interest lay more in solving problems than in making money.

The microcomputer-based BBS culture of the 1980s served as an incubator for shareware — a marketing model with a foot in both the "software wants to be free" and the "we must make them pay" camps, based on the notion that potential customers should have the opportunity to test drive software before having to decide whether to lay out their hard-earned money for it. That model was also wildly successful, despite the relatively small percentage of users who ever actually paid for programs, because it reduced vendors' distribution costs to almost zero, and it, too, has survived and thrived through the present day.

AND THROUGH THE WIRE

In the 1990s, the Internet began expanding exponentially in size as the microcomputing tsunami began to peak, and together these trends are rewriting the rules of software marketing altogether. Almost overnight, the ubiquitous physical storefront model, once typified by Egghead Software, has been made obsolete by the rising popularity of Internet-based electronic distribution. As a result, vendors' distribution and packaging costs have plunged, as have their traditional marketing costs. Web sites and email lists are now rapidly replacing costly printed advertising and direct-mail solicitations, just as downloadable archives have replaced floppy diskettes and CD-ROMs.

As that trend accelerates, there will remain only one major cost center for software vendors: development of product code and documentation. (Product support, which requires huge amounts of human and other corporate resources, has largely shifted to a pay-as-you-go basis, making it revenue-neutral.)

The cost of traditional software development is substantial. Programmers — even imported Indian and Pakistani programmers — and their managers cost serious money. Development labs cost more money. Beta testers cost still more money, even if they're all volunteers, because their feedback must be checked, coordinated and managed.

Worse still from a user perspective, early versions of products created in the old, proprietary fashion are often buggy, unstable and lacking in features that its customers desire. As a result, vendors' reputations suffer and their support costs increase.

With the increasing tension between the relentless demand for more stringent cost containment and greater profit margins and the need to satisfy its user community's demands, the software industry is ripe for yet another Internet-driven paradigm shift. And, oddly enough, the right model just might be the one on which the Internet is built.

I SHALL BE RELEASED

On January 22, 1998, Netscape announced that it would begin giving away to end-users *Communicator 4.0*, its flagship product. More startling still, it also announced that, beginning on March 31, 1998, it would release the source code to its next-generation browser suite, *Communicator 5.0* under license terms (`www.mozilla.org/NPL/NPL-1.0.html`) that permitted third parties freely to modify the code to produce commercial and/or non-commercial products of their own — as long as those products were licensed to still other developers under identical terms.

Netscape's announcement caused a sensation, even though such fundamental Internet building blocks *sendmail* (`www.sendmail.org`) which routes most of the email on the Net and the *Apache* web server (`www.apache.org`) which powers over half the public web sites in the world (`www.netcraft.co.uk/Survey/`) have long been available under even less restrictive licenses. Industry pundits seemed to agree

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that Microsoft's *Internet Explorer* - the binaries (but not the source code) for which have been distributed for free since version 1.0 - had made such serious inroads into Communicator's dominance of the browser market that Netscape had no choice.

Whatever the merits of that argument, the fact is that Netscape's decision was strongly influenced by Eric S. Raymond's seminal 1997 white paper, "The Cathedral and the Bazaar" (`www.earthspace.net/~esr/writings/cathedral-bazaar/cathedral-bazaar.html`). In it, Raymond draws a distinction between two diametrically-opposed software development models: the "cathedral" model, in which source code is treated as an object of reverence, the construction and maintenance of which must be confined to the care of a select group of high priests, (read "in-house programming staff") and the "bazaar" model, in which source code is treated, instead, as a commons around which a community of developers coalesces to openly exchange fixes and improvements to the core product.

Raymond's paper details the metamorphosis under his stewardship of an e-mail program called popclient into a very different e-mail program called *fetchmail*. He very consciously modeled the development process on that of Linux - and his own role in it on that of Linus Torvalds, the "benevolent dictator" of Linux's evolution — and his essay draws many parallels between the two efforts.

Contrary to Brook's Law ("Adding manpower to a late software project makes it later") but in keeping with the Linux model, Raymond found that opening his development effort to suggestions and improvements from all interested parties resulted in swift and substantial improvements in functionality, stability and, oddly enough, fundamental design. Like Linus Torvalds and Larry Wall (the "Perlfather") before him, Raymond discovered that the more programmers involved in the effort, the more quickly bugs were discovered and eliminated-and that the discoverer and exterminator were often different people. He also learned that the same principle applies equally to design and functionality issues.

And it was opening the source code to general scrutiny that was primarily responsible for these phenomena.

THE TIES THAT BIND

Netscape's March 31, 1998, release of *Communicator*'s source code garnered widespread coverage from the general and industry media and created considerable excitement in the Internet community. Moving quickly to capitalize on the buzz generated by Netscape's move, on April 7, 1998, O'Reilly & Associates (publishers of a host of definitive books about various open source software products) hosted an Open Source Summit at Palo Alto, California, to which they invited an amazing contingent of core Internet software developers.

The attendees included:

Eric Allman, developer of *sendmail* and chief technology officer of Sendmail, Inc., an Emeryville, CA, startup devoted to developing and marketing a fully-commercial version of *sendmail*.

Brian Behlendorf, one of the core developers of the *Apache* web server.

John Gilmore, president of Cygnus Solutions, which provides commercial versions of and support for GNU tools and who is also (among other things) father of the `alt` Usenet hierarchy and founder of the Electronic Freedom Foundation.

Tim O'Reilly, president of O'Reilly & Associates and moderator of the plenary session.

John Ousterhout, developer of Tcl/Tk and president of Scriptics Corporation, a company he started to commercialize Tcl/Tk.

Tom Paquin and Jamie Zawinul of mozilla.org, respectively the manager of the Mozilla open source code project and the Mozilla webmaster and self-described "loose cannon" of the Mozilla team.

Sameer Parekh, CEO of C2Net Corporation, which developed the Stronghold SSL-encrypted server, a commercial product based on Apache.

Eric S. Raymond, President of opensource.org.

Linus Torvalds, father of Linux, currently employed by Transmeta Corporation.

Guido van Rossum, developer of the Python language.

Paul Vixie, chief maintainer of BIND, the software behind the Domain Name Service that translates domain names to and from IP addresses.

Larry Wall, creator of Perl and O'Reilly Fellow.

Phil Zimmermann, developer of Pretty Good Privacy and senior fellow at Network Associates, Inc., the entity created by the marriage of McAfee Associates and Network General.

All these luminaries share one thing in common. The source code to the software they create, maintain and sell is made freely available to all comers (although, due to U.S. government restrictions on the export of encryption technology, the source to PGP is made available only on dead trees). The Open Source Summit brought them all together in one place for the first time.

The Summit itself was open only to the invited participants, but the plenary session that followed it was open to members of the press. About two dozen reporters from various magazines, newspapers and media attended and they grilled the summitteers mercilessly about the viability of open source business models.

MONEY (THAT'S WHAT I WANT)

Unfortunately, the question-and-answer session generated much more heat than light. Over half the questions boiled down to some variation on the "How can you hope to compete with Microsoft?" theme, and just how open source business models work got lost in the resulting noise.

Essentially, there are four basic models for making money with open source software and there is at least one currently profitable example of each kind of approach:

Support sellers provide technical support for open source and/or freeware products (the two terms are not necessarily synonymous). Cygnus Solutions and Red Hat Software have both adopted this model and both are making a good profit on it.

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Loss leaders give some software (and source code) away to create a market for other proprietary, non-open-source products. This is the model Netscape has adopted in an attempt to leverage a customer base for its servers by giving away its browser.

Widget frosting is what Eric Raymond calls the strategy by which hardware companies use open source code to get improved drivers and interfaces. On May 9, 1998, Corel Computer (a subsidiary of Corel Coporation) announced (`www.corelcomputer.com/products/announcement.htm`) the release of its Linux-based *NetWinder* operating system, built to run on an NC-like thin client Corel has developed based on the 250-MIPS DEC StrongARM processor. Its stated goal in opening the *NetWinder* source is to "extend the software in ways that fall outside Corel Computer's business plan."

Finally, *accessorizing* is what companies like O'Reilly & Associates and Progressive Computer Concepts do — sell books, posters, complete systems with pre-installed and configured software and other adjuncts to open source software.

All four of these models are based on the adding value to software, rather than on charging money for software in, of and by itself. And three of the four are anathema to Richard Stallman, who founded the Free Software Foundation, (`www.fsf.org`) and The GNU Project, from which the GNU General Public License (`www.gnu.org/copyleft/gpl.html`) is derived.

I'M FREE

The GNU GPU, less formally known as the "copyleft", essentially forbids the incorporation of open-source code into any commercial product. Other than cost-recovery fees for duplication and distribution, it permits charging end-users only for support, and, for a long time, it was the only visible licensing alternative to simply putting a software product in the public domain. Thus, it represents a philosophy, as opposed to a business strategy-and that philosophy has a distinctly anti-business tilt.

The GNU copyleft has been supplemented in recent years by a number of other licensing models for open source software. Among the least restrictive is the so-called "artistic" license under which Larry Wall's brainchild, Perl, is made available to developers (`http://language.perl.com/misc/Artistic.html`). The "artistic" license encourages developers to create purely commercial applications using Perl, as long the standard Perl interpreter and its components are either openly acknowledged as part of the product, or are thoroughly hidden from the end user. Mere variants on the Perl standard, on the other hand, must simply be named in such a way as to prevent end users from confusing them with the original.

The BSD (`www.debian.org/misc/bsd.license`) and Debian (`www.debian.org/social_contract.html`) license models — and the Netscape Public License — are all fairly liberal about permitting developers to incorporate open source code into commercial products, as well. In general, they merely require acknowledgment of the original author's effort and indemnification of him or her from responsibility for liabilities arising from derivative works.

This fundamental difference in philosophy between the GNU copyleft's abhorrence of profit-making and the other licenses' embrace of it very likely explains why Richard Stallman, the eminence grise of the GNU community, was absent from O'Reilly's first Open Source Summit — even though John Gilmore (who is almost equally revered in the GNU world) attended. Simply put, Stallman seems to believe that "profit" is a four-letter word.

I usually describe myself as a "radical centrist." By that, I mean that I find extremism of any stripe personally distasteful and generally counterproductive. Like all the attendees at the Open Source Summit, I think there's a place for both open source and proprietary software (after all, 50 percent or more of all software is developed by corporations for in-house use). Unlike Richard Stallman, I think there's room for both the cathedral and the bazaar — and that both are necessary.

BRING IT ON HOME

So, you can buy Windows NT and a 400MHz PC with a quarter-gigabyte of RAM and put Microsoft's Internet Information Server on it — and have it run like a slug on drugs and crash four times a week. Or you can put Linux on a Pentium 90 with 32 megs of RAM, load up Apache and watch it run like a Swiss watch. You can install Exchange on your NT box and let it hog all your system resources, or you can put sendmail on your Linux machine and have RAM to burn. The choice is up to you.

But, don't try to find a commercial substitute for BIND. There isn't one. And don't look for a shrink-wrapped copy of Perl in a fancy box. You won't find one — although you *can* get it on CDROM in O'Reilly's *Perl Resource Kit*.

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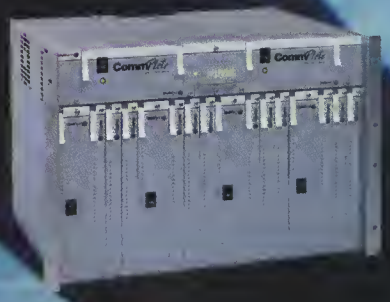

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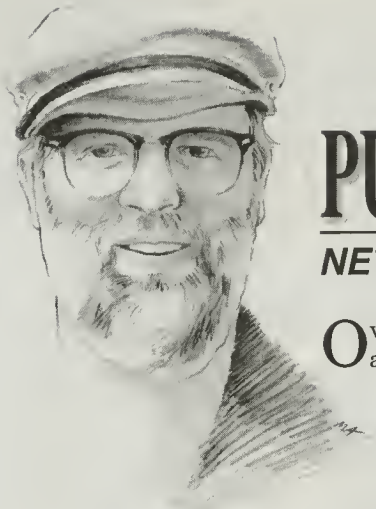

PUTTING THE NET TO WORK

by Durant Imboden

NETOBJECTS FUSION 3.0

Over the last few years, web editing and authoring tools have gone through a period of evolution characterized by four distinct stages:

Text editors. Early web authors typed HTML tags manually in ordinary text editors. Some people still design pages this way, and such "hand coding" works well enough for pages that don't require elaborate tables or exact positioning of objects. (It's also convenient for tweaking - e.g., for fixing typos or updating a page's meta tags.)

HTML editors. HotDog Pro, BBEdit, Allaire HomeSite, and similar GUI-based programs augment the basic text window with menus, buttons, and keyboard shortcuts that save time in hand coding. Instead of typing `<center>` and `</center>`, the user highlights a paragraph, clicks an icon, and lets the program generate the code.

HTML-based WYSIWYG authoring tools. Microsoft FrontPage and Adobe PageMill were the early leaders in this category; Macromedia Dreamweaver is a strong recent entry. These programs work much like a word processor, generating and editing HTML code behind the scenes as the user enters commands, links, etc. via toolbars, menus, and dialogue boxes.

Non-HTML WYSIWYG authoring tools. NetObjects pioneered this category in September 1996 with the introduction of NetObjects Fusion 1.0. Fusion was the first web-authoring program to emulate desktop-publishing applications by letting the designer place objects with "pixel accuracy" on a grid and generate HTML files at the end of the job.

Durant Imboden is a freelance writer whose credentials include published novels and nonfiction, fiction editing and staff writing for ***Playboy***, travel writing for corporate clients, and representing authors at a New York literary agency. He currently manages the Writing Forum on The Microsoft Network and co-authors the "Flame Wars" column on Delphi, where he is an editorial consultant. Durant maintains a web site for writers at `http://www.writ ing.org`. MailTo: `imboden@writing.org`

FUSION 2.0: ROOM FOR IMPROVEMENT

NetObjects Fusion 2.0 added many new features to the program and smoothed some of its rougher edges. In a review of Fusion 2.0 last August, I wrote:

> NetObjects Fusion 2.0 has made HTML programmers unnecessary for the vast majority of web sites—including most high-end sites that emphasize graphic design.
>
> Just as desktop-publishing applications like QuarkXPress put traditional typesetters and keyliners out of work, NetObjects Fusion 2.0 and its successors will force HTML coders to learn Java, JavaScript, or other marketable skills. In a year or two, the idea of coding a Web site in Notepad or even HotDog Pro will seem as quaint as laying out a magazine with an X-Acto knife and hot wax. NetObjects Fusion 2.0 is nothing less than an industry milestone: a Ventura Publisher or FrameMaker for the Web.

Despite the freedom and productivity that it offered the designer, NetObjects 2.0 wasn't without its detractors. Most criticism focused on a handful of shortcomings:

- NetObjects Fusion's use of single-pixel GIFs and nested tables resulted in large HTML files.
- It was difficult to import existing HTML content into sites built with Fusion.
- HTML files created with Fusion couldn't be edited manually (at least, not easily).
- Fusion forced the designer to accept a rigid directory structure (e.g., most .htm or .html files in "`ASSETS\HTML`" and GIFs or JPEGs under "`ASSETS\IMAGES`.").
- NetObjects Fusion 2.0 had a street price of $475 when it was released, or more than triple the cost of Microsoft FrontPage.

FUSION 3.0: READY FOR PRIME TIME

With the release of Fusion 3.0 for Windows 95 and NT 4.0 this spring, NetObjects showed that it had been listening to users and critics. The latest version eliminates most of the shortcomings of Fusion 2.0, and it maintains the Fusion tradition of using multiple "views" to organize the process of site management, content creation, and publishing. (Apple fans, please note: A Macintosh version should be available by the time you read this.)

Site view

This is the view used to lay out the structure of a Web site. Pages are represented by boxes that are arranged in a hierarchy and connected by lines, like blocks in an organization chart. You can switch from this iconic "structure view" into an "outline view" that resembles Windows Explorer by clicking on a tab. In outline view, you can check the status of a page and choose whether to include it when the site is published to a web server.

For the first time, NetObjects Fusion lets you reference external HTML pages as if they were part of a Fusion-created site. This simplifies web management without requiring you to import and edit existing content.

Also new to version 3.0 is "section control," which assigns navbars or other attributes to a portion of a site. Section control also allows previewing by page or section, which saves time when designing or tweaking large sites.

Click on a page icon in Site View, and you'll see the page in:

Page view

Page View displays the page's content, which consists of frames for images, text, and other objects against a grid background. The page layout is displayed against a neutral gray background, along with toolboxes and dialogue boxes that can be "docked" in the top bar, minimized, or hidden to increase screen real estate.

Here's how you might design a simple page, using Fusion's tools:

First, you click on the picture icon in the left-hand toolbar and draw a small frame on the page grid. A dialogue box opens, letting you choose an image from the site's existing "assets" or another folder on your hard drive. Close the box, and the image appears on the grid. You can then move the image wherever you want it on the page and use the "Properties" dialogue to set its attributes, create an anchor or link, etc.

Next, you click the text icon and draw a text frame on the page. You can immediately begin typing text into the frame or paste it from another application. ("Drag and drop" is another option.)

You decide that you'd like rotating pictures, so you select the Rotating Picture icon from the component toolbar. A dialogue box appears, and you select the number of images, how long each should display, the GIF or JPEG file used for each picture, and a hypertext link for each. When you publish the page, NetObjects Fusion will automatically post the necessary Java applet to your web server.

(For examples of rotating pictures, see the banner ads and typewriter photos at my own web site, `www.writing.org`.)

You also want to include HTML code for a webring that you've joined, so you create a text box and click the "HTML" button under "Layout Properties." A window opens, and you type or paste in your HTML code. You can then use the "Preview" button to see the finished page in your preferred web browser—which is just as well, since getting the HTML object to display exactly where you want it may require fiddling with the layout.

(Note: NetObjects Fusion 3.0 bundles Allaire HomeSite 3.0, which you can use to edit HTML objects or existing HTML pages that you're referencing from a Fusion site.)

If you're eager to use the latest Web bells and whistles, you can create DHTML-based animations and interactive behaviors within Fusion 3.0. Wipes, flying objects, chained actions, and similar easily overdone effects are easy to create through a series of dialogue boxes. You can also insert scripts of your own.

For text-heavy pages, Fusion 3.0 has a new "textual mode." This mode works much like a word processor, and it results in leaner code.

Which NetObjects Fusion feature is the most useful? My vote goes to "MasterBorders." These adjustable borders are repeated automatically on each page, along with any site banners, navbars, photos, text, and other components that have been placed within them. (You can have the borders display throughout the site, within a section, or on a single page.)

If you wish, NetObjects Fusion will generate HTML frames for the MasterBorders at publication time. However, you may want to use the default "in-page" MasterBorders, which will ensure that (1) pages are displayed with all navigation elements, and (2) your content is spidered by Excite, Webcrawler, and other search engines that get confused by framed pages.

Style View

NetObjects Fusion comes with more than 200 built-in "SiteStyles" or design themes, including 50 that are new in version 3.0. SiteStyles consist of banners, primary and secondary navigation buttons, datalist icons, backgrounds, link colors, etc. that can be modified or used right out of the box. Custom styles can be added, using existing or user-created images for banners and buttons.

Select the "Style" view from the main Fusion toolbar, and you'll be taken to a page that shows all the style elements for the active theme. You can double-click on elements to change them, or you can select another style from the list and use the "Set Style" button to change your site's design theme.

My "Baby Boomer's Venice" site was created with the "Venezia" SiteStyle. I simply typed the text for the banner and the navigation buttons, and NetObjects Fusion did the rest. Take a look at `www.writing.org/venice.htm`.

Assets View

The Assets Manager is a list of all the resources in your web site, categorized under four headings: files, links, data objects, and variables. You can open assets directly from NetObjects Fusion 3.0. For example, clicking on sporty.gif and selecting "Open Asset" will automatically launch your graphics program and open your favorite Spice Girl's picture for editing.

Any changes made in the Asset Manager (new image files or changed URLs, for example) will be propagated throughout the site.

You can also verify links in Assets View. (Link verification works in the background, so you can work in Site, Page, or Style view while the program is checking internal and external URLs.)

Publish View

NetObjects Fusion lets you publish directly to any Web server without server extensions. But that's just for starters. The program's "Everywhere HTML" philosophy means that you

can publish for nearly any browser or combination of browsers without changing the content on your site. Once you've made a selection from the available publishing options, Fusion 3.0 automatically generates the appropriate HTML code.

For example, if you're creating a public web site and know that many users will have 3.0 browsers, you can choose the default "Nested Tables" output settings. Or you can pick the "Regular Tables" output setting, which guarantees compatibility with Netscape Navigator 2.x or Internet Explorer 2.x.

If, on the other hand, you're creating pages for a corporate intranet and all users have fourth-generation browsers, you can choose "CSS and Layers" at publishing time. This will pay off with leaner, quick-loading HTML pages.

Note that you can republish the same site with different output options later on. This means you won't have to write off hundreds or even thousands of existing pages if your organization (or your target user) moves up to the next generation of web browser.

Important: If you passed up earlier releases of NetObjects Fusion because you couldn't live with its factory-determined site directories, it's time for another look. Fusion 3.0 lets you select between three standard directory structures, or you can create your own.

Other goodies

NetObjects Fusion 3.0 has improved support for objects created in Shockwave Director, Flash, and QuickTime. It has off-the-shelf components for message boards, rollover pictures, and a picture loader (for images from external sites), as well as the time-based pictures, rotating pictures, DynaButtons, Site Mapper buttons, and ticker-tape display that were added in Fusion 2.0.

The program also supports external data objects from a desktop or SQL database with ISAM or ODBC drivers. Dynamic data publishing is another option, using third-party components such as Allaire ColdFusion and Fusion2Fusion, Fundere Selective Server, and Lotus Domino with NetObjects Fusion Connector.

A "BIG 3" COMPARISON

Is NetObjects 3.0 right for you? Let's compare it with the other leading high-end WYSIWYG authoring tools:

Microsoft FrontPage 98 is easy to use; it's like a Microsoft Word for the web, with a superb table editor. FrontPage has excellent site management (including link verification) and convenient access to HTML via an editing window. On the downside, it modifies HTML code and is plagued by irritating bugs (some of which I mentioned in last month's column). IDEAL USER: Someone who's producing pages for a database-driven publishing system or cranking out single-column text pages with the occasional photo.

Macromedia Dreamweaver 1.2 is loaded with state-of-the-art DHTML features, but its real strengths are its "Roundtrip HTML" philosophy (i.e., "don't mess with imported HTML code") and its ability to generate code according to user-defined "stylebooks" for indentation, upper- and lower-case tags, etc. Its site-management tools are minimal (it doesn't check external links), but it's nicely integrated with Allaire HomeSite 3.0 for Windows or BBEdit for Macintosh, which are bundled with the program. IDEAL USER: A designer who's making the transition from hand coding, works extensively with existing HTML files, or must adhere to a client's coding standards.

NetObjects Fusion 3.0 has an easy-to-use DTP-style interface and unrivaled control over page design. It matches FrontPage 98 in its site-management features, and its "everywhere HTML" publishing flexibility offers insurance against obsolescence. But it may be overkill for largely text-based sites, and it isn't the best choice for sites with hundreds of existing Web pages. IDEAL USER: A designer or editor from a print background who's more interested in the finished product than in creating or editing HTML code.

Fusion 3.0 has a street price of $295; users of version 2.0 can upgrade for $95. Related products include NetObjects TeamFusion (a "groupware" production and design system, NetObjects ScriptBuilder, and NetObjects Fusion ProPack (which combines ScriptBuilder with third-party data-publishing tools).

For more information on NetObjects Fusion 3.0 for Windows 95, NT 4.0, and Macintosh, visit the NetObjects web site at `www.netobjects.com`. ◆

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CONSUMMATE WINSOCK APPS

by Forrest Stroud

IMPROVE YOUR NET CONNECTION

Tired of waiting an eternity for a file to download, a web page to display, or a supposed "real-time" video to begin playing over the Internet? In short, have you had enough of stop-and-no-go traffic on the so-called Information Super-Highway? If you're like most users, the biggest bottleneck by far on your computer is your Net connection, and, unfortunately, you either have to be extremely lucky or have tons of dough at your disposal to do better than your everyday 33.6/56 Kbps modem. Cable modems and DSL (Digital Subscriber Lines) are relatively inexpensive options, but they are still only available in a few select cities. If you happen to be in a city that supports either of these two types of connections, count your blessings and sign up as fast as you can — you won't regret it. T-1 lines and satellite connections like DirecPC are alternative options, but both are way too expensive to justify purchasing for individual or small business use.

The good news is that these aren't your only options. Another inexpensive alternative that all modem users can take advantage of won't magically transform the speed of your modem connection into that of a T-3 line, but it can dramatically improve your Internet performance if you're willing to spend a little "trial-and-error" time with it.

The applications reviewed here and many more are available at Stroud's Consummate Winsock Apps List, `cws.internet.com` and `www.stroud.com`.

Forrest Stroud currently works in College Station, Texas as a web developer for Mecklermedia Corporation. He recently graduated with honors from The University of Texas at Austin. The Information Systems and Data Communications Management major enjoys spending what little free time he has with his wife Joanne and the 'zoo' - an ever-expanding collection of pets that currently consists of a Dalmatian pup (Svoda Pop), a chocolate lab cross (Roemer), a German Shepherd pup (Marius), and a pair of rascally kittens (Odie Pez and Bo Miggy). Animal lovers can check out pictures of the pets on Stroud's home page at `home.sprynet.com/sprynet/neuroses`

TweakDUN

Desc:	A cost-efficient solution for improving the speed of your Net connection
Pros:	The most inexpensive way to dramatically improve Net performance, easy to use, works with all modems
Cons:	Doesn't optimize settings for NT as well as it does for '95/98, doesn't update the hosts file automatically
Location:	`www.pattersondesigns.com/tweakdun/td_21s.exe`
Status:	Free 30-day evaluation. Shareware - $15
Platforms:	Windows 95/98, Windows NT
Company:	Patterson Design Systems
Website:	`www.pattersondesigns.com/tweakdun/`

TweakDUN is an ultra-useful client that automatically changes the TCP/IP settings stored in your system registry in order to more effectively eliminate packet fragmentation and thereby increase data throughput. These TCP packet-size settings were originally configured for LANs and similar networks and didn't take into account Internet connections. As a result, the default values for these settings typically hinder the performance of your Net connection.

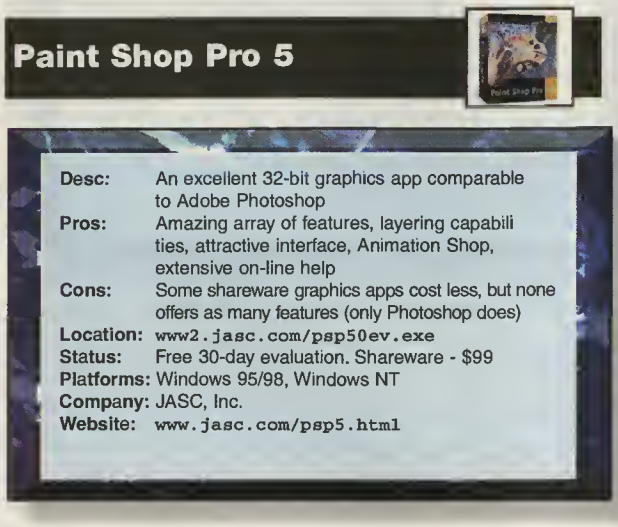
TweakDUN will allow you to modify the Windows default settings for MaxMTU (Maximum Transmission Unit - the default packet size used by Windows and the Internet), RWIN (TCP Rcv WINdow — amount of received data that can be buffered at one time on a connection), and TTL (Time To Live - an indicator for how long a packet should be allowed to survive before it is discarded) without having to manually change the registry yourself and, even better, without having to know what any of these settings actually do. The client also offers Path MTU (PMTU) Auto Discovery for automatically determining the MTU size being used by other servers and routers, PMTU Black Hole Detect for discovering routers that do not send back ICMP (Internet Control Message Protocol) fragmentation-needed messages, a Session Keep Alive feature for keeping an idle Net connection from being disconnected, and a MaxMTU Find utility for finding the exact MaxMTU being used by remote servers.

In addition to its ability to change Window,s packet size settings, TweakDUN offers a second major feature for improving Internet performance. The client will automatically import your Netscape bookmarks and Internet Explorer Favorites, convert the URL addresses to their respective numeric IP address values, and enter the values in your local host file. This enables you to skip a time-consuming step each time you connect to the sites you visit most often — having the IP addresses in your local hosts file prevents your modem from having to contact a domain name server to get the numeric address for any given URL. The only shortcoming to this feature is that the numeric IP addresses for URLs occasionally change. TweakDUN helps you get around this problem with an update-all feature.

TweakDUN works with Windows NT as well as Windows 95/98, but Microsoft has configured the Windows NT settings more efficiently than the Windows 9x releases, so you probably won't see as great an improvement when using TweakDUN with NT. TweakDUN can improve the performance of any adapter that uses TCP/IP protocol, including PCI, ISA, PCMCIA, and Dial-Up Adapters. The client configures both software and hardware adapters and is not limited to just standard analog modems — it will also work with ISDN modems and even cable modems (for all those fortunate speed gluttons out there who think they need even more speed). The evaluation release will give you a good idea of the performance

enhancements you can expect to see, but there are some restrictions in this release including the absence of the "update all" option for the hosts feature and the inability to change the RWIN, TTL, and Session Keep Alive settings.

Overall, TweakDUN makes for a must-have client if you are the least bit interested in improving the speed of your Net connection. TweakDUN may not double your data transfer speed, but improvements in the range of 25-75 percent are definitely possible. And with a price tag of only $15, TweakDUN is the most-cost efficient option available for boosting your Net speed.



Paint Shop Pro may well be the consummate exemplar of shareware applications, demonstrating that shareware clients really can compete with the big boys. Not only does Paint Shop Pro offer more than 90 percent of the features found in expensive commercial rivals like Adobe Photoshop, it includes a ton of its own unique feature with a great-looking interface and an excellent online help system. Even better, Paint Shop Pro costs less than $75 and is available on the Net for a free 30 day trial evaluation. Photoshop, on the other hand, will set you back more than $500, and you can't even try it out first!

All the standard image tools are built into Paint Shop Pro as well as extremely useful features that you won't find in Photoshop and similar competitors. Includes quick and painless batch conversion capabilities for converting graphic files from one image type to another, advanced screen capturing with automatic drag 'n' drop into the Paint Shop interface, a built-in browser for quickly viewing an entire directory of images, color replacer and masking tools, interlaced graphics support (for GIF 87a and 89a images), vector-based image capabilities, and more advanced image filtering tools than you could possibly imagine. Paint Shop Pro even provides built-in browsers for allowing you to preview the effects of its array of filters and image manipulation tools.

Paint Shop Pro also offers support for more than 40 different graphic types (including both raster/bitmap and vector-based images) as well as support for third party Adobe compatible plug-in filters. All the popular graphic types are supported, including GIFs (with transparency and interlacing options), JPEGs (with a progressive JPEG option), Portable Network Graphics (with a PNG transparency option), Windows Bitmap (BMP), Kodak Photo-CD (PCD), Corel Draw (CDR), Microsoft Paint (MSP), and Photoshop (PSD), as well as less familiar file types like Electronic Arts (IFF), GEM Paint (IMG), Truevision (TGA), Portable Bitmap (PPM) images, and a whole lot more. In fact, Paint Shop Pro more than doubles Photoshop's support for only 15 different graphic types.

Definitely one of its best features, Paint Shop Pro's online help system implements tabbed folders, quick navigation, extensive documentation, and advanced search capabilities, making the task of understanding how to use the program's massive collection of features a surprisingly enjoyable experience. Recently implemented Paint Shop features include floating and customizable toolbars, extensive layering capabilities (making it possible to separate an image into individual components and layers), texture and gradient fill capabilities (a refreshing and useful addition to the client), OLE 2 support, image arithmetic options, emboss and clone brushes, and TWAIN compliant scanner support. Special effects options are also available, with drop shadow, image buttonize, chisel, hot wax coating, cutout, and seamless tiling tools.

Another recent addition to Paint Shop Pro (as of version 5.0) is the integrated Animation Shop client. Animation Shop will take you step-by-step through the process of creating and modifying animated graphics. The program offers an extensive set of image and text transitions with intuitive wizards and previews for helping you add cool effects to your animations. In fact, Animation Shop may be best suited for taking an existing animation and adding special effects to it, because while creating a new image is a relatively painless process with Animation Shop, an app like GIF Animator is better designed for the creation process. Animation Shop can save animations in either the standard animated GIF format or Jasc's own proprietary MNG animation format.

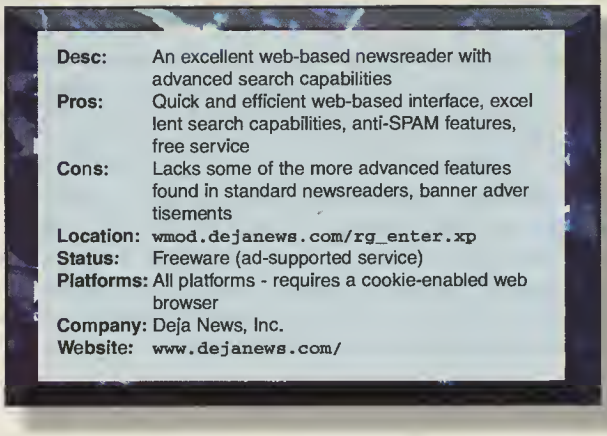
Paint Shop Pro does lack a couple of minor features that would make it even better. First, generating transparent GIFs could be made more intuitive for new users with the help of a wizard or similar hand-holding tool. Also, the near-perfect inline screen capture tool lacks only the capability to define a specific sized area (x by x pixels) for capturing, a useful feature found in another Jasc product, JasCapture. Overall though, you'd be extremely hard-pressed to find a better graphics program on or off the Net, especially for less than $75. For the majority of users, it just doesn't make sense to shell out $500+ for an app like Photoshop when a comparable client like Paint Shop Pro costs so much less and offers just as much (if not more) in most areas. And thanks to the shareware premise, you can try it out yourself before putting any money down. What could be better than that?

MY DEJA NEWS

My Deja News is a personalized news service from the Internet's premier Usenet news search engine, Deja News (`www.dejanews.com`). The Deja News web site presents users with extensive options for searching its complete archive of all Usenet posts dating back to 1995 (more than 175 Gigabytes of information!). The web-based My Deja News newsreader offers nearly all the essential features of a typical newsreader and at the same time provides seamless access to the unparalleled Deja News search capabilities. Even better, the service is free — for users who can live with the standard web ad banner or two, My Deja News is the most cost-effective newsreader this side of Free Agent.

As a newsreader, My Deja News provides a fast and efficient interface for getting the latest news articles from your favorite Usenet newsgroups. Filtering out old or unwanted information so that you can quickly access important articles is one of the newsreader's many strong points. One area where My Deja News really sets itself apart from the competition is its news

My Deja News



Desc: An excellent web-based newsreader with advanced search capabilities
Pros: Quick and efficient web-based interface, excellent search capabilities, anti-SPAM features, free service
Cons: Lacks some of the more advanced features found in standard newsreaders, banner advertisements
Location: `wmod.dejanews.com/rg_enter.xp`
Status: Freeware (ad-supported service)
Platforms: All platforms - requires a cookie-enabled web browser
Company: Deja News, Inc.
Website: `www.dejanews.com/`

searching features. In addition to powerful search capabilities for finding newsgroups and specific information in news articles, you can also search for articles by subject or by author.

Additional features in My Deja News include free access to more than 50,000 newsgroups (especially useful if your ISP has a limited or nonexistent supply of newsgroups), automatic spam filtering, a simplified and intuitive web-based interface, and the ability to access the newsreader from anywhere (although you won't have access to all of your settings without your default web browser's Deja News cookie). The service is still relatively new, so expect more features to be added in the near future, including e-mail spam filters.

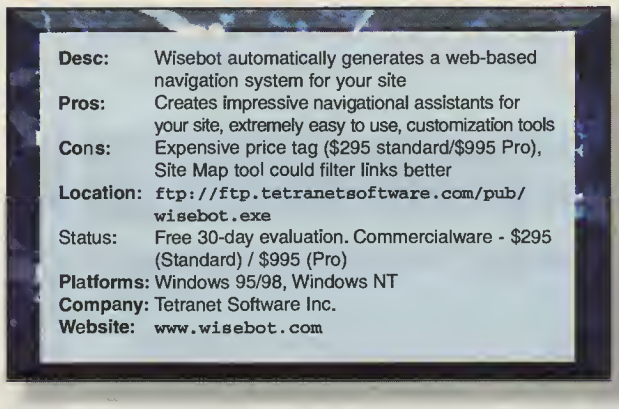
There are a few drawbacks to using My Deja News as opposed to a standard newsreader. First, My Deja News filters out all graphics, so if one of your hobbies happens to be downloading binary image files from certain newsgroups, My Deja News is definitely not going to be your best bet. My Deja News also lacks some of the more advanced features found in newsreaders like Agent and News Xpress, including article sorting capabilities, mark for later retrieval options, customizable font and screen options, multilingual support, and thread ignoring capabilities. Finally, although My Deja News is a free service, you will have to suffer through the standard fare of web advertising banners when browsing newsgroups.

WISEBOT

Wisebot is a cool new web development tool that will automatically create and maintain an entire navigational system for your web site using a combination of Java applets, push channels, and standard web pages. Wisebot can deliver critical features for your web site that would otherwise be possible only by hiring a professional programmer or by coding your own interactive applets and scripts. Compared to either of these two cases, Wisebot is bound to save you money.

Extreme ease of use is definitely one of Wisebot's best qualities. The plug and play software automatically generates and updates navigational assistants for your web site (or sites) without any programming required on your part whatsoever. In fact, all you have to do is type in the URL that you want the app to work on and Wisebot does the rest. After gathering information from the pages on your web site, Wisebot generates a knowledge index applet, a site map applet, a What's New web page, and a push channel for your site. You then have the option of editing or further customizing the applets and pages using Wisebot's built-in editing tools, or you can publish the navigational assistants directly to your web site with a simple click of a toolbar icon.

Wisebot



Desc: Wisebot automatically generates a web-based navigation system for your site
Pros: Creates impressive navigational assistants for your site, extremely easy to use, customization tools
Cons: Expensive price tag ($295 standard/$995 Pro), Site Map tool could filter links better
Location: `ftp://ftp.tetranetsoftware.com/pub/wisebot.exe`
Status: Free 30-day evaluation. Commercialware - $295 (Standard) / $995 (Pro)
Platforms: Windows 95/98, Windows NT
Company: Tetranet Software Inc.
Website: `www.wisebot.com`

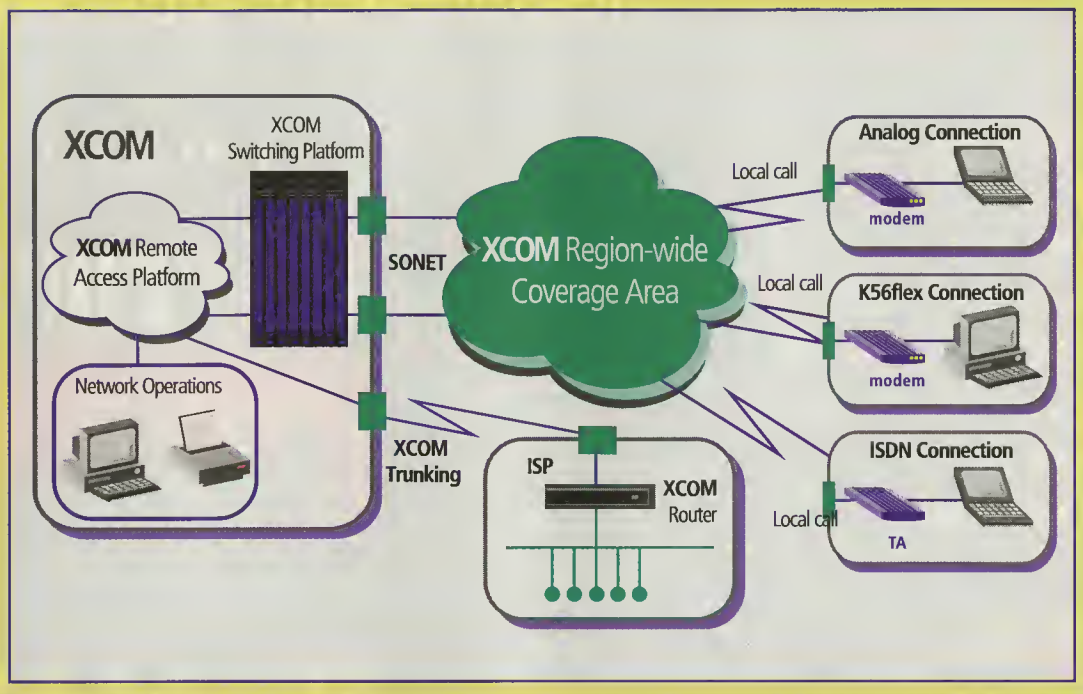
The first of the two Java applets produced by Wisebot is the knowledge index. This applet utilizes Tetranet's unique Keyword Extraction Technology to scan your site and create an interactive index that your users can peruse to quickly locate specific content and information. The Wisebot Extractor takes each of your web page documents as its input and generates a list of keywords and key phrases as output. The resulting knowledge index performs a function similar to a search engine but in a help index format. The second applet Wisebot creates is a dynamic site map that gives users a visual structure of your entire web site. It also presents your users with the ability to quickly jump to specific pages on the site. Wisebot generates a default map for you, but it works by extracting links from the site's major pages and as a result often reports redundant and incorrect structure information. The upside is that you can modify the site map to your exact needs using the client's editing tools.

The What's New page that Wisebot produces is a standard HTML page with a complete listing of the pages that have been recently added or updated to your web site. The only requirement is that your web pages have a time/date stamps associated with them — servers aren't always configured to stamp the time and date on pages, so you'll want to make sure yours is in order to reap the full benefits of this feature. As with the other applets, you can set Wisebot up to dynamically update the What's New page on your site as content is added or updated. The final interactive tool created by Wisebot is a What's New push channel that you can set up for Internet Explorer 4.0, Netscape Netcaster, or PointCast. The channel provides subscribers with a periodically updated What's New web page. As is the case with the non-push What's New feature, Wisebot can be configured to automatically update the channel when content on the site changes.

Overall, Wisebot gives you the ability to add advanced capabilities to your web site without the time and costs associated with programming your own Java applets or hiring someone to do so. Users with sites in need of search capabilities, site structure information, or support for push channels will benefit the most from Wisebot. The only real downside is the client's price. The standard version costs $295 and scans individual sites with up to 500 pages, while the $995 Pro version scans sites of unlimited size and can also scan multiple sites simultaneously and integrate the output. ◆

"A Price Break for ISPs"

tele.com, January 1998



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— see page 9

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An Invitation

to the Fall 1998 Internet Service Provider Convention ISPCON Fall '98

Jack Rickard

We are most pleased to invite you to the 1998 Internet Service Provider Convention (ISPCON), September 28-October 1, in San Jose, California. ISPCON has emerged as THE meeting place for Internet service providers and national backbone operators, as well as the technology companies that tool and enable them. Our Fall '98 West Coast event, in the heart of Silicon Valley, already promises to be the largest event we've ever held with over 5,000 Internet service providers, CLECs, RBOCs, cable operators, telecommunications resellers, and an assortment of venture capital firms and media quite beyond anything we've ever organized.

And we'd like you to come.

Over the past year, the very definition of Internet service provider has become a bit frayed as satellite companies, local telephone companies, wireless companies, cable television companies, telecommunications resellers, and others have determined that Internet access and packet networks are a "must have" component of any communications product mix. All of telecommunications threatens to evolve toward providing access services to a global packet network known as the Internet. And the resources brought to bear on such problems as bandwidth to the home, connecting small- and medium-size businesses, deploying voice over the IP network, quality of service guarantees, virtual private networks, caching and performance are almost mind boggling to contemplate at this point. Representatives from every major company in every one of these segments are expected at this Fall's ISPCON in San Jose.

As both the technologies and the business models for Internet communications access evolve almost minute by minute in this firestorm, the importance of gaining a rational, informed perspective on what the future holds for us all in Congress, and for each individual business planner and implementer, takes on gargantuan proportions. The slightest edge in intelligence on where and how to participate can literally mean the difference between life and death for many of these companies - not in twenty years, but in two years.

There is currently no noticeable shortage of Internet-related trade shows. But most are designed to appeal to the mass of Internet users. ISPCON has succeeded as the ONLY trade show designed for Internet service providers - the people who make the network run and provide access to those customers. We've encountered such success that virtually all of the larger Internet shows have tried to lay claim to the ISP market with pavilions, special tracks, event stunts, etc., to persuade exhibitors that they have a serious contingent of ISPs attending their shows. But they apparently failed to mention it to the Internet service providers themselves. ISPCON is designed for those serious about providing Internet access either for profit as part of a communications product line, or internally in their companies.

The result is a smaller, more focused show that is NOT particularly open to the general public. If you are not involved in provisioning Internet access services, building national networks, helping companies successfully make the connection or designing the technical and server end of Web hosting/development, you will undoubtedly find ISPCON chaotic, technical, and confusing. In a word - stay home. You'll clutter the action for those faced with the mammoth task of building and extending a network and doing so at a profit for their businesses. This show is for ISPs.

In the past two shows, we have had some notable participation from a second group. We call them "Internal ISPs." These are the technical implementers within medium to large businesses who maintain a connection to a public backbone or service provider and almost immediately wind up providing identical services to various entities within the corporation. We used to say they were ISPs without the billing problem. As it turns out, we were even wrong about the billing problem.

As always, ISPCON is an intensely educational meeting event. We have scheduled over 150

educational sessions in both presentation formats and meeting/discussion formats, addressing every aspect of operating an ISP business, a tiny fraction of which can be profiled in this brochure. These sessions cover business topics such as marketing, operational models, and how to value an ISP business. They also deal with inter-ISP operational policy issues such as peering, settlements, caching, QoS, performance measurement, and exchanges.

But many of the sessions do get technical. We had fifteen sessions on voice over IP networks at the spring show and actually expect more at the fall event as this area develops. Similarly, we have entire tracks devoted to virtual private networks, caching strategies, QoS, and other newly emerging products and services that alter the access business.

But it also covers and really reflects the ever evolving technologies of delivering Internet access through cable, wireless, satellite, xDSL technologies, and how to find the opportunities in IP telephony. There are even sessions dedicted to ISP exit strategies, mergers, acquisitions, initial public offerings, and how to value an ISP company.

Indeed, the more popular sessions center on finance, capital, and effective business techniques you can use to grow Internet access and service businesses. ISPCON has attracted a significant contingent of venture capital firms, investment bankers, accounting firms, and other service businesses working with service providers.

In an industry fueled by technological change, it comes as no surprise that technology always occupies a central role at ISPCON. Virtually every significant vendor of an Internet product at this point totally comprehends that if it doesn't sell among the Internet service providers, it doesn't have a chance in the wider world of the Internet body politic. The corollary of course is that if you can capture the attention and enthusiasm of the ISP community, you have entrée into essentially the 60 million customers they, as a group, provide access to. That's incredible leverage through a scant 5,000 players. It may be one of the reasons ISPCON is steadily displacing larger shows as THE place to unveil the latest hardware and software developments in communication technology. This too is a double-edged sword. Some companies have unveiled products at ISPCON to enthusiastic approbation among ISPs and gone on to dizzying success in the wider world. Others have unveiled products at ISPCON, and after face-to-face conversations with ISP attendees, who can be frank at times, found that returning to the skunkworks to make some previously overlooked product changes BEFORE a wider launch has saved literally millions of dollars of time, effort, and resource. One thing is certain, few ISPs are of the personality type to just smile and take the free T-shirt. True and worthwhile interaction between ISPs and the developers who tool them is virtually a signature of ISPCON. And there simply isn't anyone more familiar with Internet end-users than the Internet service providers.

I am more enthused about our session schedule this fall than any we've previously presented. One aspect of gaining a position as THE meeting place for ISPs is that we get more and better proposals for sessions with each passing event. This fall's schedule is utterly overwhelming.

Keynoting the event is John Sidgmore, vice chairman and chief operating officer for WorldCom. Sidgmore served as CEO of UUNET before it was acquired by WorldCom, and remains CEO of the subsidiary. He now claims that fully 25

John Sidgmore

John C. Dvorak

Dave Barry

percent of WorldCom's total revenues and over half of their growth comes from Internet access services. In a $37 billion proposed merger with MCI, Sidgmore inarguably presides over the largest Internet access business in the world. He's dealt with every aspect of the Internet business from a startup, through funding, growth, an initial public offering, more growth, acquisition by WorldCom, more growth, government review of business mergers - literally everything that can happen to an ISP has happened to him. His views on the future of the network, the future of the Internet access business, and the future of technology, will likely directly affect what that future ultimately is.

And long time industry pundit John C. Dvorak has agreed to join us for our opening session festivities this year. Dvorak has one of the longest running and mostly widely followed columns in computer journalism in *PC Magazine*, and has also commented on the online world as the final word in each issue of ***Boardwatch Magazine*** for a number of years. His acerbic wit, and unavoidable skepticism born of nearly 20 years of watching products and fads come and go across the personal computer space make for a thoroughly humorous and usually profoundly informing presentation that boils the hurricane of confusion surrounding this space down to some common sense rules that all products and all services must follow to succeed. Dvorak masters the maxims and rules of thumb for success in the high-tech world with such authority that he remains the most widely read computer columnist on the planet.

Finally, we have Dave Barry, one of the funniest commentators on all things in life, but particularly on the Internet and World Wide Web. As a humor columnist for the *Miami Herald* newspaper, Barry gained national acclaim through a series of syndicated columns appearing in newspapers around the country, a series of humorous books, and more recently via the World Wide Web with his own Web site competing with dozens of Dave Barry Fan Club Web sites across the netscape.

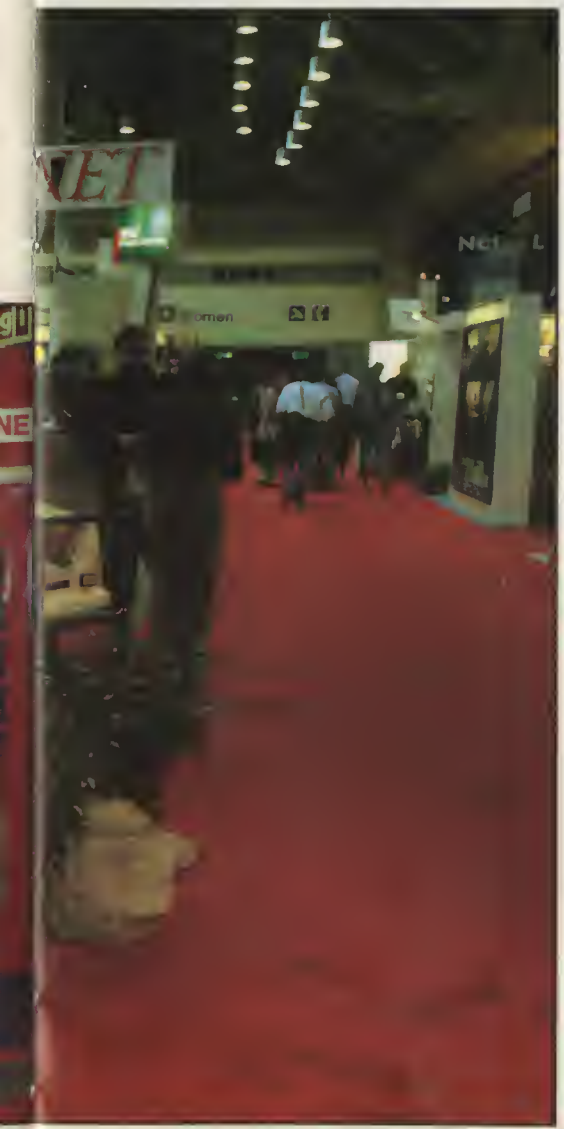
Major sponsors of ISPCON include Sun Microsystems, Intel, Hewlett-Packard, and 3Com Corporation, who will lead an exhibit floor of some 55,000 square feet that includes essentially every vendor tooling and enabling ISPs planet-wide. This is the smallest, most focused single show most of these companies exhibit at, but they do so with great enthusiasm at ISPCON.

Again, the Fall '98 show in San Jose is already shaping up as the largest we've ever cobbled together in one place and

promises to be the most exciting and intense trade show event of the year. Nowhere will you find this many industry players, from this many different industry segments all focused on Internet access in one place at one time. It is the ultimate opportunity to rub shoulders with the movers and shakers in this industry, and the ultimate place to fine tune your own strategic vision of where the opportunities are in the center of the network.

Jack Rickard

P.S. Yes, we did give away a brand new AM General Hummer vehicle valued at over $75,000.00 at each of the last two shows. This has proven to be one of the most successful giveaways in all of the trade show industry. So yes, we're going to do it again. One lucky ISPCON attendee will drive home in an AM General Hummer vehicle.



Preliminary Conference Agenda

Monday September 28

3:00 pm	-	7:30 pm	Registration Desk Open
7:30 pm	-	10:30 pm	Welcome Reception

Tuesday September 29

7:30 am	-	7:00 pm	Registration Desk Open
9:00 am	-	12:00 noon	Opening Session
12:00 noon	-	7:00 pm	Exhibit Hall Open
12:00 noon	-	1:30 pm	Lunch On Your Own
1:30 pm	-	2:30 pm	Educational Sessions
2:45 pm	-	3:45 pm	Educational Sessions
3:45 pm	-	4:30 pm	Break in Exhibit Hall
4:30 pm	-	5:30 pm	Educational Sessions

Wednesday September 30

7:30 am	-	7:00 pm	Registration Desk Open
8:00 am	-	8:45 am	Morning Keynotes Continental Breakfast
9:00 am	-	10:00 am	Educational Sessions
10:00 am	-	7:00 pm	Exhibit Hall Open
10:00 am	-	10:45 am	Break in Exhibit Hall
10:45 am	-	11:45 am	Educational Sessions
12:00 noon	-	1:30 pm	Lunch: Dave Barry
1:30 pm	-	2:30 pm	Educational Sessions
2:45 pm	-	3:45 pm	Educational Sessions
3:45 pm	-	4:30 pm	Break in Exhibit Hall
4:30 pm	-	5:30 pm	Educational Sessions

Thursday October 1

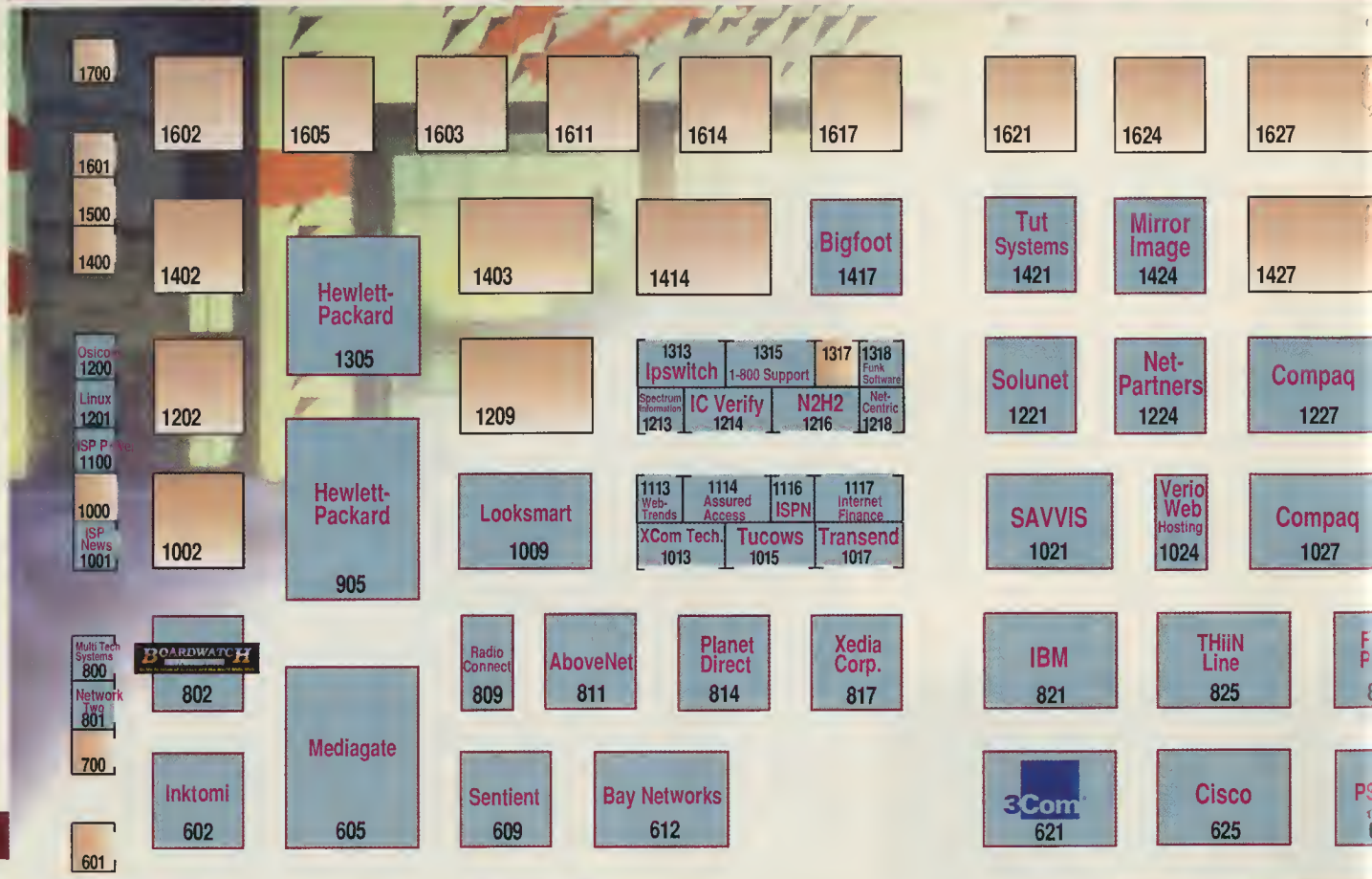
7:30 am	-	6:00 pm	Registration Desk Open
8:00 am	-	8:45 am	Morning Keynotes Continental Breakfast
9:00 am	-	10:00 am	Educational Sessions
10:00 am	-	6:00 pm	Exhibit Hall Open
10:00 am	-	10:45 am	Break in Exhibit Hall
10:45 am	-	11:45 am	Educational Sessions
12:00 noon	-	1:30 pm	Sponsored Lunch
1:30 pm	-	2:30 pm	Educational Sessions
2:45 pm	-	3:45 pm	Educational Sessions
3:45 pm	-	4:30 pm	Break in Exhibit Hall
4:30 pm	-	5:30 pm	Educational Sessions
5:45 pm			Hummer Drawing

Conference Adjourns

A Note About Yom Kippur

Please note that due to a scheduling conflict, ISPCON coincides with the Yom Kippur holiday on Wednesday, September 30th. We regret this circumstance and have taken all necessary measures to ensure that such a conflict will not occur at any of our future events.

EXHIBIT FLOOR



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1131	AccuWeather
1133	Acucomm
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440	Ascend
1114	Assured Access
1331	Balboa Capital
612	Bay Networks
1417	Bigfoot
802	Boardwatch Magazine
1035	C & W Leasing
632	CacheFlow
625	Cisco Systems
1027	Compaq
1231	DPEC
534	Dun & Bradstreet
1236	Eagle Communications
829	Fine Point
1318	Funk Software
528	GRIC Communications

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1001	ISPNews
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1317	ntr.net
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ThiiN Line
Thrust World
Tiara Networks
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General Sessions

ISPCON made its name by offering substantive educational sessions presented by the industry's knowledgeable elite. Here is a roster of sessions from ISPCON Spring '98. You can expect an equally compelling program at ISPCON Fall '98. For more in-depth information on the Fall '98 show, visit the ISPCON web page at: www.ispcon.com.

The Commercial Internet — Peering into the Future
Root Name Server Operations and DNS Security
Delta Encoding and Data Compression for HTTP
The Realities of IP Telephony
Internet Expansion
Shedding Light on the FCC Black Hole
SkyCache — Moving the Web to the Edge of the Network
VPN — The "Dial Tone" for New ISP Services
Lowering the Total Cost of Ownership (TCO) of Remote Access
Servicing Your Terms of Service Agreement
Web Hosting — Improving Quality of Service
Training — An ISP Profit Center
Monitoring Your Customers
IPv6 — Is It Really Going To Happen?
Global Reach, Local Touch -- Investing in Overseas Markets
Load Balancing and Performance Analysis as Hosting Options
Web Analysis for High Volume, Mirrored Web Sites
How Broadband Can Attract Profits
The MilliCent Microcommerce System
New Models for Peering I
IBM Internet Solutions: The Olympic Experience
The Making of the Next Generation Telco
Culture Shock — The Cultural Demand for Bandwidth
Supplementing ISP Bandwidth with Half-Duplex Satellite
The Emerging Backbone Infrastructure
Scaling Internet Bandwidth for Tomorrow
Secure Virtual Private Networks
International Bandwidth Math
Sue the Baby Bells
Strategies for Building NT Web Applications
Catching The Public Eye — Virtual Private Networks
Managed Broadband Access and Bandwidth Services
How Much Downtime Can You Afford?
How Do I Really Profit from What Lies Ahead?
Service Levels — Different Strokes for Different Folks
Protecting Your Customers From Online Fraud
Alternative Network Architectures
Marketing Programs for the Service-Oriented ISP
New Models for Peering II
Privacy Panel
Directory-Enabled Network Infrastructure and LDAP
Motivations for an ISP to Offer Internet Telephony
Online...All the Time
Fast Rewind — A History of the Modern Net
Hit Me! The Implications of Active Web Caching for ISPs
Access in the Next Millenium
Becoming an E-Business ISP
A New IP Platform for Service Providers
Frame Relay — Answering the Need for Speed
ABCs of Advertising for ISPs
Expanding Your Small Business Opportunity
Why Should Your ISP Become a CLEC?
How ISPs Can Protect Themselves from Spam
Business on the Internet: IP Quality of Service
TCP Grooming for Optimal Network Efficiency
Differentiation Through Enhanced Remote Access Services
Building an ISP with a Centralized POP
Strategies to Gain a Competitive Edge
25 Ways to Bring Cash into Your ISP I
Providing Business Internet Access in Multi-Tenant Buildings
IP-Communications — The Computer Industry Point-of-View
IP Telephony Now
Value Added Service — The Future Is Now
Hot Network Caching Technologies
Secure VPNs — Enabling ISP Services
Setting Up Your Own AltaVista Search Site
Backbone Routing Policy
Cyber Crime and Law Enforcement I
The Logistics of Wireless Internet Access
Internet 101: Packets, Routers, LANs and WANs
Business Critical Services — Insuring your Uptime
Do Thin Clients Need Thick Servers?
IP Multicast and your Future
To Outsource or Not to Outsource, That is the Question
Routing the Future — Massively Parallel Routing Technologies
Universal ADSL and its Impact on the ISP Market
Sendmail 8.9; the Spam Management Release
25 Ways to Bring Cash into Your ISP II
Truth in Numbers: The New ISP Value Paradigm
Selecting an IP Telephony Platform
How an ISP Can Make Money Selling Internet Telephony Calls
RBOC Panel I
Multi-Tiered Transparent Web Caching
VPNs — Reducing Customer Service Costs
CGI? SSI? API? SSS? What?
Utilities as "Community Service Providers"
Cyber Crime and Law Enforcement II
Tuning Internet Servers
Internet 201 — Clients, Servers, and Other Delights
What Business Customers Want in an ISP
Becoming One of the Best Run ISPs in the Industry
Building An ISP Infrastructure To Generate Cash
Manage Commercial Web Sites With Intrasite Visitor Data
Designing an ISP for Scalability and Reliability
Rentable Apps — Generate Revenue with Domino Instant!Host
Everything an ISP Wants To Know About Marketing and More
Becoming a Competitive Local Exchange Carrier
Installing and Configuring Apache and FastTrack Web Servers
Internet Telephony — Opportunities and Challenges for ISPs
Bridging the Net with Intelligent Dialtone Services
RBOC Panel II
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New Carrier Based Services
Intelligent Compression
Internet through Satellite Terminals
Routing at Gigabit Speeds
Cyber Crime and Law Enforcement III
Usage-Based Billing — Increased Profits and Customers
Dynamic Database Driven Web Sites
Reducing Bandwidth Costs with Distributed Proxy
Online Gaming as an ISP Branding Strategy
Moving Technology into the New Millenium
Partnering with Media Companies to Turn Profits
Guerilla Marketing Seminar — Round 4
ATM and the Internet
ISP Marketing I
Dial, The Next Generation; New Services, New Profits
Driving or Dragging? The 411 on Internet Telephony Standards
Building Your Service-Driven Network
InfoLibria Launches Breakthrough DynaCache Product
Reducing WAN Complexity With New Remote Access Capabilities
Nationwide Wireless Internet — Application Development
Internet Enhanced Service Provider
Defining Web Hosting Performance
Junk Mail 9B — The Growing Smell of Spam
Designing a Scalable Infrastructure for Mail
Gluing the Internet Together — Current Exchange Trends
Creating an Internet to Pager Gateway
Cryptography on the Web
Usenet News — Tuning To Survive the Current News Glut
Fax Over IP — A Collision of Worlds
ISP Marketing II
Business-Grade Electronic Commerce Services
Internet Telephony
Migrating Telco Services to the ISP
The Future of Sendmail: 8.10 and Beyond
International Bandwidth Challenges (Caching) I
VPN Scenarios — Which is Right For You?
Connectivity in the Third World — Life in the Tropics!
Building a Small ISP from Scratch Using Linux
Building an Effective Partnership with Your Telco Provider
The Business Case for the Wireless ISP
Insurance and Risk Management for ISPs
Personalized Service for Competitive Advantage
Routing Inefficiencies in Today's Internet
Scalable Products for Your Network Evolution
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Transforming the ISP with Telephony Service
New Business Model: Value-Added Computer Telephony Services
Sendmail Q&A
International Bandwidth Challenges (Caching) II
The ISP and Virtual Private Networks
Internet Initiatives Via Satellite
Voice and Fax on the Internet — The ISP's Expanding Roll
Reciprocal Compensation? The Cost of Transporting Internet
Internet Broadcast — How To
Expanding Your Small Business Market Opportunities
Beat the Chicken/Egg Syndrome — How to Market a Complex Biz
SNMP — Use it or Lose it
Business Planning for ISPs

Focusing on How To Grow Profits Now
Eliminating the Barriers to Entry for ISPs
Speech Recognition & Voice Activation Improve ISPs
Perceptions of the ISP Industry — Debunking the Myths
FCC — $2.25 Billion School & Library Universal Service Fund
Voice-over-IP and the New Multiservice Network
Bringing It All Together — Network Based Unified Messaging
Internet Regulation in the Post-Reed Hundt Era
Reverse Proxying — The Network is the Server
Using Public Networks for Private Communications - VPN
The Challenges of Fixed Wireless Data Services
Evolution of the Dial-Up Internet Access Market
Spam — Past, Present and Future
Delivering Service Guarantees Using IP Routing
Internet Applications of Cluster and Parallel Computing
ISP Billing
What are IP Services?
IP Telephony: Backbone Verses Gateway Provisions
Sales 101 for Nerds
Messaging 2000 — You Think You Have Problems Now
Routing — Advanced BGP Topics
Becoming a Profitable ISP
The Internet Unbound
Internet Telephony — The Third Wave of Telecommunications
PBXs — The Here and Now
A Guide To Directory Services Technologies
What Comes After Caching?
VPNs — New Revenue Opportunities for ISPs
Internet Over Satellite — Where Are We Now?
Growing Hosted Web Sites Into Hosted Web Businesses
Spam, Spammers and Spam-Fighting Technology
Building Tomorrow's Internet
Moving Customers up the Value Chain
Installing a CUSeeMe Reflector — Video for the Rest of Us
Next Generation Distributed Broadband Architecture
The Internet In Canada
Carrier Class Remote Access
Ready, Set, Go — Standards Based Payments on the Web
DSL Technology Issues for the ISP
The New Commercial Internet — Where Do We Go from Here?
A Recap of Merger and Acquisition Activity
Designing an Internet Telephony Network
Internet Telephony
Profitable Sales Strategies for the ISP
Transparent Caching
Reducing Traffic with Intelligent Compression and Caching
Solving Internet Congestion — A New Data Network Model
IPv6; An ISP Perspective
Always On Dynamic ISDN
The Current State of E-Commerce, 2nd Annual Address to ISPs
Beyond Value Add — Becoming an E-Business ISP
Routing — Snapshots of a Growing Network
Bandwidth Management — Tackling the Internet Traffic Jam
Indexing Technology To Deliver Value Added Applications
Consolidation — Let's Make Money
Moving Outside the Box
Firewalls, Trojan Horses, and Storming the Bastille
Predicting the Growth and Change of the Internet
Buying and Selling an ISP — Another Case Study
Developing and Managing an IP Telephony Network
High-speed Wireless Internet Access
Guerilla Marketing
Jacks or Better — Requirements for Large-Scale Network Cache
Virtual Private Networks — Beyond Tunneling
Caching Is Hot, But Can Be An Administrative Nightmare
ISPs As Brands Versus Commodities
POP Placement — How To Get The Most Bang For Your Buck
Adding NT Based Services to a Unix Based ISP
Managing growth: The Need for Scalability
CPA Services Enhance ISP Performance
The Importance of Real-Time for an Internet Billing System
Distributed Authentication using RADIUS
Linux — 3000 Users, One Box
Community, Content and Commerce — Bridging the Gap
IP Telephony Panel I
TCP/IP — Why Is it So Slow and How to Speed it Up
ISP Valuations
The ISP-Specific Phone Company
Extending the Internet Using Geosynchronous Satellites
Web Caching Scalability
VPNs — Leveraging Security Services
Business Applications for Voice Chat
Managed Database Access as a Web Hosting Option
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Caching Panel
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Niche ISPs and Their Success Stories
New Business Opportunities with Internet Multimedia
How Can Small and Medium ISPs Stay in the New Services Game?

Win A HUMMER!

We're doing it again. Every ISPCON Fall '98 attendee has an equal chance to win an AM General Hummer. You have to be present as the convention closes on October 1 to win and you should be prepared to drive it away. Ask Steve Wilcox, an ISP in Monument, Colorado, who drove one home from ISPCON in San Francisco last September. Or ask Chris Candreva, an ISP in Rye, New York, who drove one home from the Baltimore convention in March. Someone will find his or her way home from San Jose in a Hummer.

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President and CEO of UUNET

Vice President of WorldCom

John Sidgmore joined UUNET Technologies in June of 1994 as president and chief executive officer. Over the past four years, UUNET increased its annual revenues from $7 million to $600 million, and is now the world's largest Internet access provider with over 2,000 employees. Sidgmore steered UUNET through a series of rapid-fire mergers that expanded his company into a global presence. In 1995, UUNET launched the third most successful initial public offering on NASDAQ for that year. In 1996, UUNET joined forces with MFS Communications Co. in a merger valued at nearly $2 billion. That winter, WorldCom, Inc. acquired both MFS and UUNET in the fourth largest merger in corporate history. Then in the fall of 1997, WorldCom announced a pending merger with MCI, potentially the largest merger in U.S. history. During the winter of 1998, WorldCom orchestrated a three-way transaction in which WorldCom/UUNET would acquire the infrastructures of ANS and CompuServe and secure a multi-billion dollar, five-year contract with AOL.

Before joining UUNET, Sidgmore was president and CEO of CSC Intelicom (formerly Intelicom Solutions). CSC Intelicom was the largest independent software company in the telecommunications industry, with about $100 million in annual revenue and 600 employees worldwide. Sidgmore received his B.A. in Economics from the State University of New York in 1973.

ISPCON has gained a unique reputation for providing quality educational sessions presented by industry leaders. Since the Internet industry is still in its infancy, these sessions cover a wide range of topics from ISP marketing to IP telephony, from this to that. Software, hardware and services all have a valid place among those who make a living in the Internet services industry. This year's show is representative of the Internet's scope, which has expanded into previously undreamed of areas. In addition to over 100 vendors exhibiting at ISPCON, sponsors including 3Com Corporation, Hewlett-Packard, Intel, and Sun Microsystems. Each come from a unique sector of the Internet industry.

Keynote Speaker

John C. Dvorak
Writer and Commentator

Since 1976, John C. Dvorak has been stirring up the microcomputer industry. He started a software company in 1978 and by 1980 the business was so successful that he had to quit his job and run the company full time. At the same time, he began a newsletter called the *Software Review*.

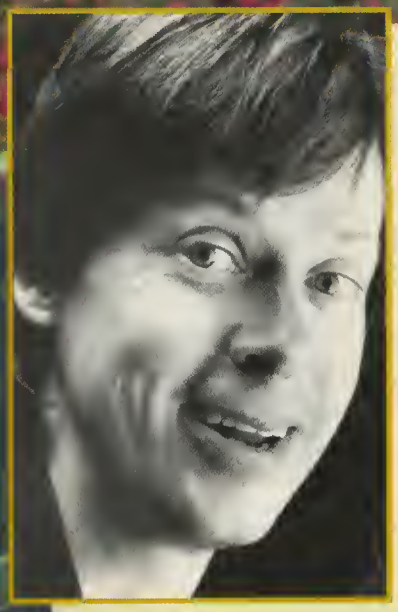
In 1982, because of his knowledge of computers, contacts in the field, and writing skills, he was approached by CW Communications to edit a growing journal called *InfoWorld*. After two years at the position, two book contracts required that Dvorak concentrate on writing. In 1981 he dissolved his software firm and has been writing full time since.

His work appears regularly in *Boardwatch Magazine* as well as computing and networking magazines, and newspapers around the world. He has written numerous books including *Dvorak's Inside Track to DOS & PC Performance*, *Dvorak's Guide to PC Telecommunications*, *Dvorak's Guide to PC Connectivity*, and *Dvorak's Inside Track to the Mac*.

Dvorak does a weekly syndicated radio show, "Software/Hardtalk." Dvorak has appeared on "NBC's Nightly News" and "Overnight," and hosted "Computerworld Special Reports," as well as appearing in several other television venues.

3Com intel HEWLETT PACKARD Sun microsystems

Dining with Dave



Keynote Speaker

Dave Barry
Syndicated Humor Columnist

Wednesday, September 30, 1998
12:15 p.m.

Sponsored by Sun Microsystems

Sun microsystems

Dave Barry is a syndicated humor columnist whose often-amusing articles appear in hundreds of newspapers every week. When he is not writing his columns, Barry writes for the *Miami Herald*'s *Trapic Magazine*. Barry has won a Pulitzer Prize for several of his humor columns in the category of Distinguished Social Commentary in 1988 and is the lead guitarist in a rock band called the Rock Bottom Remainders. Barry is the leader of the Urban Professionals and an all-around nice guy who tries to protect his readers from the dangers of the world around them, like exploding cows and trout falling from the sky.

Barry's most recent piece of work, *Dave Barry in Cyberspace*, epitomizes the way many people feel about computers. According to Barry, "The function of RAM is to give guys a way of deciding whose computer has the biggest, studliest, most tumescent memory. This is important, because with today's complex software, the more memory a computer has, the faster it can produce error messages. So, the bottom line is, if you're a guy, you cannot have enough RAM. Bill Gates currently has over 734 billion 'megs' of RAM, and he still routinely feels the need to stuff a zucchini in his underwear."

Barry has emerged as something of a cult hero online with numerous Web sites, mailing lists, and Usenet newsgroups devoted to his humorous columns.

Above all, ISPCON Fall '98 is an industry meeting: the most professional gathering of ISPs and industry leaders anywhere.

Sessions will begin at 9:00 a.m. Tuesday, September 29 and continue through 5:30 p.m., Thursday, October 1.

All sessions will be held in the San Jose McEnery Convention Center.

The cognoscenti. The powerful. Those technically adept and in-the-know. ISPCON provides rare access to the people shaping the ISP industry from the top down, leaders whose billion-dollar businesses stretch across every inhabited continent and 22,000 miles into space. From programmers to CEOs to legal eagles, ISPCON speakers come from diverse fields of expertise.

As always, ISPCON is about variety, with pertinent sessions covering hardware, software, marketing, telephony, connectivity and services. Over 200 experts will speak at the Fall '98 show in San Jose, California. Here is a sample of the prominent presenters attending the show. For more information, check out the ISPCON web page at: www.ispcon.com.

Bernard Aboba

Senior Program Manager Internetworking
Microsoft

Bernard Aboba is senior program manager for Internetworking at Microsoft. He leads the team designing virtual private network (VPN), remote access and routing, and management technologies for the Windows platform. Aboba previously lead the development of Internet functionality for the Microsoft Network, including deployment of the worldwide MSN TCP/IP network and MSN's Internet services for mail, news and Web. Aboba has written two books on the Internet, as well as more than a dozen Internet drafts. He remains in a number of IETF working groups, including RADIUS, PPP Extensions, Audio/Video Transport, MBONE Deployment and Roaming Operations. Aboba holds a Ph.D. from Stanford University, an MBA from UC Berkeley, and a BA from Harvard University.

Eric Allman

Chief Technology Officer
Sendmail Inc

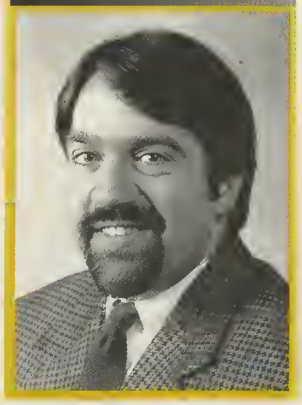
Eric Allman is a well-known Internet pioneer and the author of sendmail, currently the Internet's dominant e-mail transfer software. Allman wrote the first version of the program in 1981 to route messages between the University of California at Berkeley's computer systems and ARPAnet, the government computer network that preceded the Internet. Sendmail's source code has always been openly available to all users, and over the years programmers and network administrators have contributed to its growth by deploying, developing, testing and refining the program as the Internet emerged. Sendmail is now the de facto implementation standard for e-mail transfer protocols on the Internet. More than one million copies of the freeware are installed, representing over 75 percent of all Internet mail servers. Allman continues to lead sendmail.org, the worldwide team of volunteers that maintains and supports the freeware product. While developing sendmail, Allman served as chief programmer on the INGRES database management project and was an early contributor to Berkeley UNIX, authoring syslog, tset, the troff-me macros and trek. Allman has also served as the chief technical officer at InReference, Inc., a Web-based search engine start-up; co-authored the "C Advisor" column for *UNIX Review* magazine; and has been a member of the Board of Directors of USENIX Association. Allman received a master of science degree in computer science from University of California at Berkeley in 1980.

Gabe Battista

Chief Executive Officer
Network Solutions Inc

Gabriel Battista has served as chief executive officer of Network Solutions, Inc. since October 1996 and as a director since November 1996. As CEO, he is responsible for developing and implementing strategic planning initiatives for Network Solutions. Battista is responsible for overseeing development of corporate purpose, mission and objectives, business development programs, alliances and key customer relationships, identification, acquisition and development of key senior personnel, proactive development of NSI's governance policy, and acquisition of the capital resources necessary to meet the company's long-term objectives. Before joining Network Solutions, Battista served as CEO of Cable & Wireless, Inc., the nation's largest telecommunications services provider, exclusively providing businesses. Battista is also credited with leading the worldwide Cable and Wireless group in the development of a global Internet infrastructure. Battista received a BS in electrical engineering from Villanova University, MS in electrical engineering from Drexel University and an MBA. from Temple University. Battista serves as director of Axent Tech Technologies Inc., Systems & Computer Technology Corporation and the Greater Washington Board of Trade. He is also a registered professional engineer in the state of Pennsylvania.

Jim Bodio



Technology Manager
Intel

Jim Bodio is a technology manager for Intel's Network Systems Operation, a division that develops infrastructure and management tools for campus networks. Bodio is responsible for improving quality and has been working on Internet and WAN related technologies since 1994. Over the last 13 years, Bodio has worked a number of jobs for Intel. As product line manager for Internet server solutions, Bodio helped develop Internet access and presence for small business through PC server OEMs. He helped pioneer one of Intel's first marketing efforts on the Internet. He also served in product marketing and marketing communications on NetportExpress' print servers and StorageExpress' backup servers.

Eric Bakri Boustani

Business & Intellectual Property Lawyer
Davis & Schroeder PC

Eric Bakri Boustani received a certificate in High Technology Law from Santa Clara University School of Law. He graduated cum laude from the San Francisco State University with a BS in Business Adminstration and an emphasis in Computer Information Systems. Prior to attending law school, Boustani worked as a programmer and systems analyst. Since admission to the bar in California, he has pursued intellectual property and litigation cases with Davis & Schroder. Boustani has been involved in several large Internet domain name disputes and helped many businesses to protect their intellectual property on the Internet. He regularly lectures on the dangers and opportunities of doing business on the Internet.

Matthew Burnett

President
Wireless Internet LLC

Matt Burnett is president of Wireless Internet LLC, a company offering wireless communications to corporate end users. His clients include Hughes Research Lab, Airtouch Communications and Orange County, California. Burnett has four years of research in the wireless data industry and three years experience in Internet site development. He also published a technical article specifying wireless Internet application. Burnett holds a master's degree in industrial psychology with a specialty in usability testing in software design and has devoted four years to wireless research and development.

Steve Berman

President
Homenet Communications Inc

Steve Berman is president of Homenet Communications, Inc., an ISP in Warner Robins, Georgia. Berman is one of the founders of Homenet, and is currently focusing the company's resources on wireless Internet and data applications. Homenet has built and maintained wireless networks since August 1996, and has been an ISP since June 1995. Before starting Homenet, Berman was a contractor for the Air Force, working on networks at Robins AFB, and has served in various technical, management and consulting positions for over 15 years, including projects for Ameritech, the United Nations, and SAIC. Berman holds a BS degree from the University of New Hampshire.

Bruce Chovnick

Senior VP
Consulting Services Division
Network Solutions Inc

Bruce Chovnick is the senior vice president and general manager of the Intranet Services Division of Network Solutions, Inc. Chovnick is responsible for the growth and expansion of the division's intranet consulting business, an internationally recognized industry expert in business and technical corporate extranet strategies. Before joining NSI, Chovnick was vice president of Global Internet Solutions at GE Information Services, Inc. where he led both the Internet and Network Services divisions. In 1996, under Chovnick's leadership, GE Information Services delivered a record number of Internet-based services to the market. In addition, Chovnick founded Actra Business Systems, a joint venture between Netscape Communication Corporation and GEIS. Previously, he led GE Information Services' worldwide network engineering and software development.

James D. Earl

Assistant General Counsel
Covad Communications

James Earl is assistant general counsel for Covad Communications. Earl spent the 18 previous months in the FCC's Competition Division. From 1984 to 1991, he was the telecommunications attorney for the Department of State. Earl has also provided legal counsel and policy advice for Inmarsat, an international provider of mobile satellite communications worldwide. He has consulted for foreign and domestic firms on a variety of communications issues, ranging from international frequency coordination to augmenting wire-line networks with wireless local loops. Before focusing on telecommunications, Earl was an Army and Foreign Service officer and has worked in the Sinai Desert for an international peace keeping organization.

Klaus Etzel

Director of Business Development
TCG CERFnet Inc

Klaus Etzel has more than 10 years of systems engineering, systems analysis and systems management with firms including Mercedes Benz, Siemens, Applied Thermodynamics and General Atomics. He joined TCG CERFnet in 1994 to assist in the expansion and integration of the company's nationwide Internet backbone and then headed up the company's business development activities. He is responsible for developing Internet and Web hosting services and facilities to meet the firm's business customer requirements.

Ben Feder

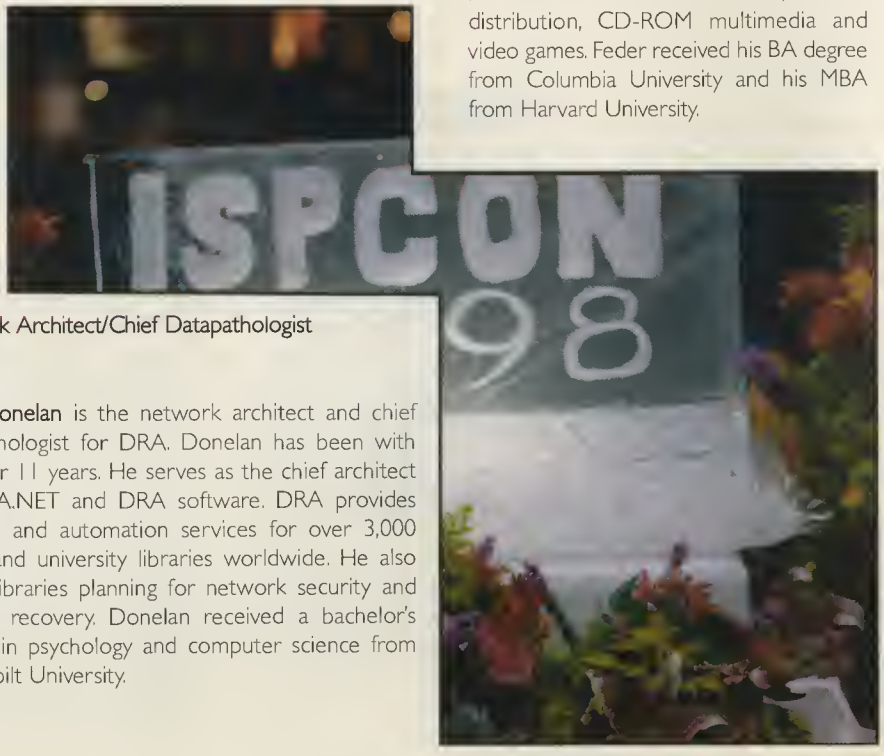
CEO
.comfax Inc

Ben Feder is .comfax's founder and chief executive officer. A recognized expert on Internet faxing, Feder's company focuses on Internet faxing as a value-added service for ISPs. A veteran of Rupert Mudroch's News Corporation, Feder was one of that organization's youngest executive vice presidents. From 1994 to 1996, Feder managed News Corp's Internet joint venture with MCI. He was responsible for negotiating the licensing and acquisition of technology, content and applications. He also managed marketing, operations, content and advertising activities for the Internet service launch. From 1991 to 1992, Feder managed business development at Fox, Inc. There he developed opportunities for investments in television stations, wireless distribution, CD-ROM multimedia and video games. Feder received his BA degree from Columbia University and his MBA from Harvard University.

Sean Donelan

Network Architect/Chief Datapathologist
DRA

Sean Donelan is the network architect and chief datapathologist for DRA. Donelan has been with DRA for 11 years. He serves as the chief architect for DRA.NET and DRA software. DRA provides Internet and automation services for over 3,000 public and university libraries worldwide. He also assists libraries planning for network security and disaster recovery. Donelan received a bachelor's degree in psychology and computer science from Vanderbilt University.

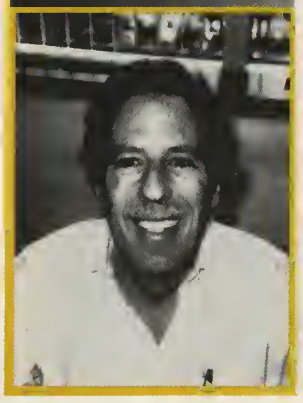


Rudolph Geist

Attorney
Wilkes, Artis, Hedrick & Lane

Rudolph J. Geist is a telecommunication attorney with the Washington, DC, firm of Wilkes, Artis, Hedrick & Lane. The firm specializes in defining and developing Internet law. He regularly publishes in the areas of telecommunications and Internet regulatory policy, including columns for *Boardwatch Magazine*, *ISP Today Magazine*, and *I$P Report: The Financial Newsletter for Internet Service Providers*. Geist represents ISPs in matters before the FCC, Congress, and state bodies, including relations with other telecommunications providers, carrier certification, and USF discount programs. Geist recieved his law degree from the Communications Law Institute at the DC-based Catholic University of America. At Catholic, Geist served as lead articles editor of *CommLaw Conspectus: Journal of Communication Law and Policy*. He graduated magna cum laude and Phi Beta Kappa with an honors interdisciplinary degree in communications law from Temple University.

Howard Gittleson



Director of Internet Security Products
Bell Laboratories

Howard "Howie" Gittleson is director of the Internet Security Products Group at Bell Laboratories at Lucent Technologies. He leads the Lucent Managed Firewall project. Gittleson has 19 years of experience in Operations Support Software, including software development and system testing; product management and OS business development in international markets (in Europe, the Asia/Pacific region, and Central and Latin America); and network management systems engineering and architecture. Gittleson began his Bell Labs career in 1978 testing software and developing systems. He became a technical manager in 1983, responsible for system testing for Special Services Testing Products. He was named department head in 1987. In 1990, Gittleson became product team leader for SARTS Special Services Testing. He became director of Network Management Integration Planning in 1994. Gittleson holds a BS degree in physics from McGill University, Montreal, and master's and Ph.D. degrees in experimental high-energy physics from Harvard University.

Eric Goldman

Attorney
Cooley Godward LLP

Eric Goldman (formerly Eric Schlachter) is an associate in the business department at the law firm of Cooley Godward, LLP, Palo Alto office. He joined the firm in 1994. Goldman represents high technology and emerging growth companies in a wide variety of intellectual property transactions, commercial contracts and general business issues. Goldman's practice emphasizes the needs of companies doing business in cyberspace. He is an adjunct professor of Cyberspace Law at the Santa Clara University School of Law. In addition to publishing articles on sysop liability in the *Hastings Communications and Entertainment Law Journal* and on copyright and the Internet in the *Berkeley Technology Law Journal*, Goldman has published articles on cyberspace topics in numerous business, legal and technical periodicals. He has also given presentations on cyberspace topics at more than a dozen conferences. Goldman received his JD in 1994 from the UCLA School of Law. He was an editor of the *UCLA Law Review* and received three American Jurisprudence awards. Concurrently with his JD, Goldman received an MBA in entrepreneurial finance from the Anderson Graduate School of Management at UCLA. He was elected to Beta Gamma Sigma. Goldman received his BA in economics and business, summa cum laude, from UCLA in 1988. He was elected to Phi Beta Kappa and was named a Chancellor's Marshall for distinguished university service. Before attending graduate school, Goldman worked as a senior analyst at a commercial real estate company. Goldman is a member of the State Bar of California.

Doug Humphrey

President
SkyCache

Doug Humphrey is the founder of DIGEX, a 1991 basement startup ISP that grew into a $150 million ISP before being sold to Intermedia Communications in 1997. Finding retirement dull, Humphrey has started several ventures, including SkyCache, a Web caching firm and collocation company.

Jim Hollis

President & Founder
Intenet Finance & Equipment

Jim Hollis is president and founder of Internet Finance & Equipment. He focuses his company on the business aspects of running a successful ISP through cash flow improvement programs. Hollis's understanding of the Internet industry and knowledge and experience of technical and business issues, provide him with unique market strategies. Hollis continues to work exclusively with more than 500 local and regional ISPs to help them compete against the big players. Hollis brings to Internet Finance & Equipment over 20 years of business experience. Hollis has worked for some industry leaders in electronic commerce products and services where he achieved high acclaim for sales and consulting. These include Tandem Computers (now Compaq Computers) where he was responsible for launching Tandem's Internet strategy. Hollis received his BS in business education from Western Illinois University in Macomb, Illinois.

David Holtzman

Senior VP of Engineering
Network Solutions Inc

As senior vice president of engineering, **David Holtzman** is responsible for the operations and technological development of Network Solutions' domain name registration services. Since he joined NSI in February 1997, Holtzman has been responsible for making his company's operations center into a world-class 24 x 7 network information center, developing software and maintenance methodology and defining a new product line.

Ron Johnson

President
National Support Center

Ron Johnson is president of National Support Center and a pioneer in the fledging ISP tech support industry. Conceived and implemented after the release of Netscape Navigator 1.0, NSC paralleled the Internet's meteoric rise in popularity. The first to enter this new market segment and one of the few to succeed, NSC has been setting the standard in support, pricing and operational procedures ever since.

Mark Kosters

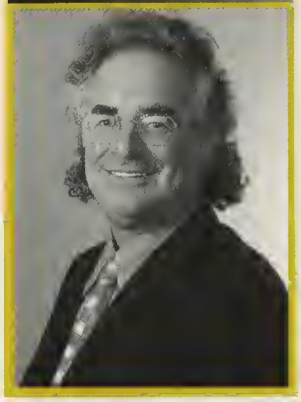
Chief Engineer
Network Solutions Inc

Mark Kosters is currently chief engineer at Network Solutions, Inc. Network Solutions is responsible for security, routing and information servers. Kosters's other duties include serving as the principle investigator for the InterNIC project.

Ivan Kotcher
Manager-Strategic Consulting
Dimension Enterprises

Ivan Kotcher is a senior industry analyst at Dimension Enterprises, a network design and architecture firm based in Herndon, Virginia. Kotcher specializes in Internet value-added services markets, with particular emphasis on competitive analysis. He is currently working on assisting carriers and others with Internet exchange development outside of the United States. Before Dimension Enterprises, Kotcher served as assistant director of the Commercial Internet Exchange.

Avram Miller



Corporate Vice President
Director, Business Development
Intel

Avram Miller is corporate vice president and director of Business Development for Intel. He is charged with the development of new business initiatives and the establishment of many externally focused business relationships. These include the formation of strategic alliances with major corporations as well as equity participation in early stage companies. Miller joined Intel in 1984, was promoted to group vice president in 1989, and was appointed corporate vice president in January of 1996. Today his focus is on the convergence of communications, computing, and consumer applications. Miller remains active in developing business opportunities that will connect personal computers in homes to multimedia-rich content and applications through a variety of broadband mechanisms, including cable, satellite, xDSL, and wireless systems. He has held professorships at the Medical School of Erasmus University in Rotterdam and the Medical School of Tel Aviv University. He is on the Board of Trustees for the California Institute of the Arts. He also serves as chairman of the board of directors of Plugged-In, a non-profit organization founded to bridge the technological gap between East Palo Alto, California, and the Silicon Valley.

Doug Mohney

Director of Marketing
SkyCache
Boardwatch Columnist

Doug Mohney is the streaming media columnist for *Boardwatch Magazine* and has been published in the *Washington Technology*, *LA View*, and *The Washington Post*. He also contributed to the *Internet World Guide to Webcasting* from Wiley Computer Publishing. In his day job, he is the Director of Marketing for SkyCache. Prior to joining SkyCache, Mohney was hire No. 10 at a budding Internet service provider, DIGEX, in 1993. Starting as a sales representative, he held a variety of positions, including director of marketing and product manager. As the company expanded, he handled a range of duties including public relations, print advertising, and direct mail. In the fall of 1996, Mohney became manager of ISP-TV unit, an experimental test bed for Internet broadcasting. During his tenure, ISP-TV received recognition as a leader in developing techniques for live video broadcasting over the Net.

Pushpendra Mohta

Executive Vice President
TCG CERFnet

Pushpendra "Push" Mohta has been with TCG CERFnet since its inception, responsible for guiding the development of one of the most robust ISP backbones in the industry. Mohta remains active in a variety of international Internet standards and program committees. CERFnet was one of the original members of the National Science Foundation Network (NSFNet), predecessor to today's commercial Internet. The post-NSFNet organizations remain the backbone of the Internet. These firms are moving away from the congested NAPs to private peering, CERFnet's fast-packet deployment strategy. Mohta has established Internets in more than a dozen countries: including Brazil, Fiji, India, Korea, Mexico, the United Arab Emirates and Venezuela. Mohta continually searches for new alternatives for meeting business' future communications and commerce needs. Mohta holds an MS in computer communication systems and theory from the University of California, San Diego. He serves on the TCG's Management Committee and on Compaq Computer's Telecom Advisory Board.

Timothy O'Reilly

Founder and President
O'Reilly & Associates

Timothy O'Reilly has co-written numerous technical books, including *UNIX Text Processing*, *Managing UUCP* and *USENET*, *The X Window System Programming Manual* and *The X Toolkit Intrinsics Programming Manual*. O'Reilly's publishing company produced one of the first commercial sites on the World Wide Web, a stepping-stone inspiration in the development of the Mosaic browser, Netscape and other later browsers. The O'Reilly Web Site server was the first server designed for Windows NT and Windows 95.

Dominic Orr

President and CEO
Alteon Networks

Dominic Orr is president and chief executive of Alteon Networks. Orr joined Alteon in November 1996, with more than 20 years of experience in the computer networking industry. Previously, Orr was senior vice president at Bay Networks. He held overall responsibility for product management, development and marketing within the company's intelligent hub product business unit. At Bay, Orr had specific duties of defining new business and market segments, establishing overall product architecture, application and system strategies and business/product partnerships. Orr was directly responsible for Bay Networks' acquisition of Centillion and Armon as well as the creation of Bay Networks' NETGEAR subsidiary for the SOHO network market.

Before joining Bay, Orr spent 12 years at Hewlett-Packard with his last assignment as director of marketing and product operations in Asia Pacific for HP's Computer Systems organization. Orr's other positions within HP include general manager in Asia Pacific of the Information Networks Group.

Before HP, Orr was with Hughes Aircraft where he led the design and implementation of the first large-scale local area networks for the Radar Systems Group. He holds a bachelor of science degree in physics from the City University of New York and a master's of science and Ph.D. from the California Institute of Technology. Orr is 45 and was born in Macao in South China.

William E. Perren

President
Networks Telephony Corporation

William E. Perren is president of NetWorks Telephony Corporation. He was previously responsible for developing sales strategies to meet the needs of multinational customers at Infonet Services Corporation. Perren also served as executive vice president for Business Strategy and Technology and president of Development and Operations, responsible for network operations and computing on a worldwide basis. Before joining Infonet, Perren spent 23-years at IBM and oversaw all hardware and software service in the western United States, Hawaii and Far East. Prior to joining NetWorks as president, Bill Perren presented at the annual Yankee Group outsourcing conferences, Global Internet Conference in Australia 1996, and presented customer briefings for multinational corporations throughout much of his career with both Infonet and IBM. Perren holds a BA in business administration and an MA in business administration from the University of Southern California.

Ross Rader

Director of Marketing
TUCOWS Interactive Limited

Ross W. Rader is the director of marketing for TUCOWS Interactive Limited. TUCOWS not only runs one of the busiest Web content services in the world, but also runs Canada's largest privately held Internet service provider, Internet Direct. Rader has been speaking at various Internet events for the last five years and has been quoted on various Net issues in such publications as *Wired*, *The New York Times*, and the *Toronto Star*. Educated at the University of Winnipeg, Rader has been working with TUCOWS since 1993. Rader is currently managing the deployment of the firm's first large-scale e-commerce project, a software delivery service employing wholly automated, real-time transaction processing and fulfillment systems.

Jack Rickard

Editor Rotundus
Founder of *Boardwatch Magazine* and ISPCON

Jack Rickard is a columnist with and editor rotundus of *Boardwatch Magazine* and *Boardwatch's Directory of Internet Service Providers*. He is also creator of the Internet Service Providers Convention (ISPCON). Before founding *Boardwatch Magazine*, Rickard spent 12 years developing communications and electronic technolgies for the defense and aerospace industries with McDonnel Aircraft Corporation, Emerson Electric Electronics & Space Division, Martin Marietta Denver Aerospace and Martin Marietta Data Systems.

Robert Rini

Attorney
Rini Coran & Lancellotta PC

Robert Rini specializes in the representation of broadcast, cable, Internet and wireless interests before the FCC, Congress, the courts and other federal and state administrative agencies. Rini is also active in the areas of trademark and copyright. He is the author or co-author of numerous articles and primers on new technologies and has lectured about telecommunications topics at various workshops and conferences. He is an acknowledged leader in the area of wireless technologies. Rini was born in Brooklyn, New York, and raised on Long Island. He attended the State University of New York at Albany where he graduated in 1982 cum laude with a BA in Public Affairs and with honors in Political Science. He attended the Columbus School of Law at The Catholic University of America from 1982 to 1985 where he received his JD degree. Rini was a member of the first class to graduate from the certificate program of the Institute for Communications Law Studies at Catholic University

Shirish Sathaye

Vice President of Engineering
Alteon Newtorks

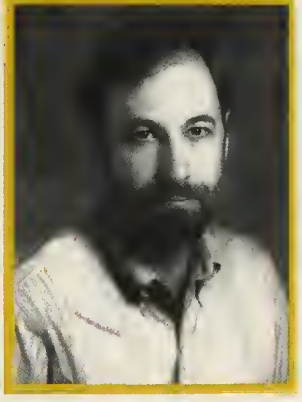
As vice president of Engineering, **Shirish Sathaye** is responsible for all product and technology development programs at Alteon Networks. With over 12 years of internetworking experience, Sathaye has extensive expertise in both the software and hardware aspects of high-speed switch development, including ASIC design, software engineering and network architecture. Previously, Sathaye was product group director for Fore Systems' Enterprise ATM Switching Group. He led the development and release of a number of Fore's ATM switch products, including the ForeRunner LE 155, ASX-200BX and the ASX-1000. Before Fore Systems, Sathaye spent several years with Digital Equipment Corporation in semiconductor operations. He has also worked in the Network Business Unit for Digital. Sathaye received his Ph.D. in computer engineering from Carnegie Mellon University, his MS from Virginia Polytechnic Institute and undergraduate degree in electrical engineering from the Institute of Technology in India.

Paul Stapleton

Senior Vice President
Rampart Associates Inc

Paul Stapleton is senior vice president at Rampart Associates, Inc., an Internet investment bank. Stapleton also speaks and writes extensively about business and the Internet. He is the financial columnist for ***Boardwatch Magazine*** and the editor of *I$P Report - The Financial Newsletter for Internet Service Providers*. Prior to joining Rampart, he ran an Internet focused financial consulting firm from 1993 to 1997. Clients have included EarthLink Network, Inc., Excite Inc., Infobeat Inc., MCI, Microsoft, News Corporation, Ziff-Davis, Coopers & Lybrand, Dvorak Development, Opus Capital, Cyberspace Development and InfoNow. He has negotiated and structured hundreds of strategic Internet business relationships. Stapleton's early career experience is in banking and publishing. He has an MBA from Columbia Business School, a BSFS from Georgetown University School of Foreign Service and an IBD from Nijenrode, The Netherlands School of Business.

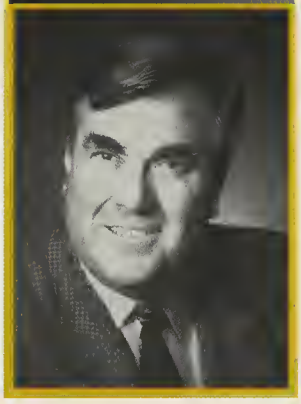
Don Rule



Program Manager
Microsoft

Don Rule is a program manager in the NT networking team responsible for virtual private network products. Rule contributes to the Microsoft Commercial Internet System that provides Internet accessibility for MSN subscribers. He is also principal consultant with Microsoft Consulting Services. Before joining Microsoft, Rule was the manager of Systems Engineering and director of MIS for a large international corporate network.

Bruce Sinclair



Director, President and CEO
WaveRider Communications, Inc.

Bruce Sinclair is an industry leader who brings 20 years experience in the field of high-technology management development, organizational re-engineering and international sales and operations. The former president of computer giant Dell Canada and CEO of Dell Europe, Sinclair was instrumental in growing European sales from $250 million to over $1 billion in an two-year period for Dell Europe. With an MBA from the University of Toronto, Sinclair has worked in North America with several high-technology companies, including IBM Canada, Northern Telecom and Harris Systems Ltd. WaveRider Communications, Inc. is poised to become an international industry leader in wireless Internet access technology through the introduction of high-speed, low-cost alternatives to traditional "hard-wired" Internet service. WaveRider is developing wireless Internet network systems to provide corporations and consumers with high-speed worldwide connectivity. With an executive team experienced in directing and managing rapid growth and leading-edge R&D as well as developers and designers with a track record in achieving technological excellence, WaveRider has an outstanding foundation for its new Last Mile Solution wireless products.

Jeff Thomas
President
WebNexus
E-Mail: jeff@corp.Webnexus.com

Jeff Thomas founded WebNexus and has more than 10 years experience in software engineering for LAN products. WebNexus is a three-year-old company providing contract LAN support, Web presence and Internet access to companies and individuals occupying multi-tenant buildings throughout the San Francisco Bay area.

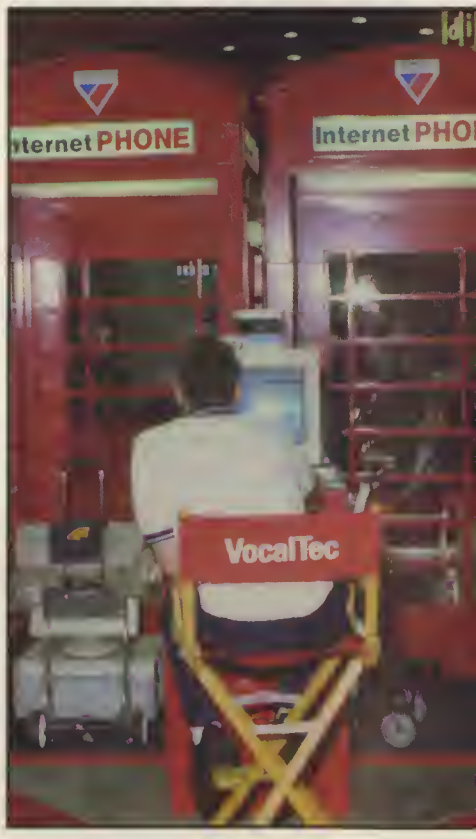
Ray Solnik
Vice President of Business
Development & Strategy
Pacific Bell Internet/Southwestern Bell

Ray Solnik is vice president of business development and strategy for Pacific Bell Internet Services (PBI) and Southwestern Bell Internet Services (SBIS). Solnik has negotiated and entered into agreements with several companies, including AOL, Netscape, Microsoft, Sun Microsystems, various Internet appliance companies, and multiple Internet service providers. Solnik has been in the Internet business since November 1995. PBI and SBIS (SBC Internet Companies) have a particular focus on growth opportunities, new business models, and ways to "evolve" the Internet revenue model by increasing revenues per customer. Before this, Solnik was director of business development and strategy as well as senior product manager for Small Business Markets at PBI. He has a broad set of experiences in the field of new business and start-up environments. Solnik has an MBA from the Stanford Graduate School of Business and a BA in economics from the University of Michigan in Ann Arbor.

Don Telage

Senior Vice President
of Internet Affairs/Director
Network Solutions, Inc.

Don Telage is the senior vice president of Internet Affairs and a director at Network Solutions, Inc. Since February 1997, he has been a leading industry strategist on the evolution of the administration and structure of the Internet required for continued commercial growth. He is the senior spokesman for NSI's positions and author of its detailed publications on these matters. He also holds the position of senior vice president with the Science Applications International Corporation (SAIC).



Chris Vandenberg

Lead Program Manager
Microsoft

Chris Vandenberg has been with Microsoft since early 1995, working first in the MSN Systems group and later in the Internet Services Business Unit. His current role is strategic planning for the Commercial Systems Division. VandenBerg is a frequent speaker at various Internet-related events on such topics as Internet personalization, service creation and the use of MS technology by ISPs. He has published articles in *Data Communications* and the *Global Telecom Review* and has participated in Internet standards efforts for networking and management protocols. VandenBerg lives in Woodinville, Washington, with his wife and two sons.

Steve Willis

Chief Tecnhical Officer
Argon Networks

Steve Willis is the CTO of Argon Networks, a startup company focused on service provider gigabit switch routers. As a founder of Wellfleet Communications Willis was the co-architect of Wellfleet's revolutionary multi-processor, multi-protocol bridge-router that stimulated the high-performance routing industry to enable the modern Internet. Previous to Wellfleet, Willis was at another Massachusetts networking pioneer, Interlan.

George Vanecek

Vice President
Inter-Tel, Inc.

Since 1995, **George Vanecek** has been a senior scientist for the Internet platform organization of AT&T Labs in San Jose, California. He has been driving the design and development of the GeoPlex platform, an internetworking product that will enable converging data and telephony networks. Before joining AT&T Labs, Vanecek was on the computer science faculty at Purdue University. In 1993, he introduced the campus to the World Wide Web technology by organizing campus-wide seminars on internetworking. His pioneering research focused on geometric modeling, collision detection, physical-based simulation, and virtual environments. During this time, he directed the Newton Project as part of the Computing About Physical Objects Group, and then the Isaac Projects. Prior to teaching at Purdue, Vanecek worked at the National Institute for Science and Technology (NIST) in the Engineering Design Lab and the Automated Manufacturing Research Facility. He also worked at IBM on large semantic networks support. As a student, he won second place in the ACM Programming Contest and numerous first place awards in other programming contests. Vanecek received his BS and MS in computer science from Purdue University, and his Ph.D. from the University of Maryland, College Park Campus.

Adam Viener

Founder & President
Cyberia Communications Inc

Adam Viener has been involved in online communications since the early 1980s. He and his wife, Sara, started Cyberia Communications, Inc. as a six-line BBS in June 1993. Cyberia has since grown into a profitable and expanding ISP and has recently been named the "Startup Company of the Year" by the Central Pennsylvania Technology Council. Veiner is widely known for his ability to creatively market his business, The Viener's son, Addison, recently appeared on "NBC Nightly News with Tom Brokaw" and MSNBC. The live cribcam points to his son at www.viener.com.

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IRIDIUM

1,500-pound low-orbit satellites — finally a satellite cellular system for voice, data, fax and paging services

By Bill McCarthy

One hundred summers ago, the United States warred with Spain in naval theaters around the Philippines and Cuba. Even when Admiral George Dewey scored dramatic victories in the Philippines it took five days to notify President William McKinley, who sat fretfully in Washington, DC, worrying about a war he really wanted no part of, but felt compelled by political pressures to engage. But even the president had to stew without information and without being able to issue commands because Dewey had ordered a cable between the Philippines and Hong Kong cut. The cable was not restored until August 22, ten days after the war ended, and a ship with dispatches from the war zone had to be dispatched from Philippines to Hong Kong, so that the resolution of the battle could be cabled to an anxious nation and president.

Through out the war communications were a problem. Dewey was essentially free to do what he thought best without the president's consent. Even in the Cuban theater, which was much closer geographically and where undersea cables were in friendly waters, the navy was out of touch in the nation's first step into international politics and warfare. And it was far worse for the Spanish.

But by the end of this summer any road warrior should be able to phone home from just about anywhere on the planet, and any commander (boss) should be able to marshal his troops by telephone or with the beep of a pager. This summer, 100 years after America stepped off its continent to become a world player, but lacked the communications infrastructure to even keep track of its warriors, Iridium LLC, is stepping into space to keep track of anybody on or above just about any square inch of the planet.

Despite being hit by technical problems, stretching a small staff into ungodly hours of labor and having to struggle to convince investors that the idea was viable over a baker's dozen of years, the Iridium satellite communications project will be ready to begin commercial services September 23. The Motorola-backed project will connect wireless telephone users across the world through a network of 66 1,500-pound low-orbit satellites in six orbital planes, 485 miles above the earth's surface.

The first phase testing of nearly all aspects of the network is complete, and testing with subscribers was to begin in July. The project, conceived by engineers with Motorola, cost $5 billion so far. Apart from the technological challenge of conducting call switching and routing in space, the Iridium pre-launch process has also seen the company meet the equally tough challenge of gaining regulatory approval to operate in more than 100 countries around the world.

The company has full L-band licenses in 47 countries and experimental licenses in three. Iridium says it will have agreements with 130 countries by the fall. Solving the regulatory

problems may be regarded as a larger achievement than getting the birds into orbit and working.

Some skeptics still believe the expense of satellite-compatible handsets and the anticipated high cost of network time will dampen demand for Iridium services. Prices are hard to come by, although Iridium says it will likely charge up to a 30 percent premium above other cellular companies. Motorola expects a retail price for its handset of about **$3,000** and the paging product to retail for about **$500**. Kyocera of Japan, which signed up in 1996 to manufacturing two kinds of Iridium handsets, does not have a retail price set for its devices. Other skeptics have also said there will not be enough customers.

Still the company presses on. Iridium signed 185 roaming agreements with a third of the world's cellular providers and will have access to 56 million subscribers and 3.1 billion points of presence. Originally the system was meant to connect remote areas of world that lack communications infrastructure. But one phone number and one bill in your home currency anywhere in the world is too good a prospect for the business road warrior market.

The system is designed to offer voice, data, fax and paging services with a handheld telephone and pager. This could have tremendous implications for the Internet in the future, although the satellites only handle 2.4 Kbps at the moment and the cellular phone market is the target. The odds of overcoming the bandwidth problems in satellittes have to look good to Motorola's Satellite Communications Group that dreamt of the satellite system, and brought it down an arduous road to an international consortium of 20 investor organizations representing leading telecommunications and industrial companies worldwide, who now have faith in the system.

In 1985, unable to place a cellular call to the United States while vacationing in Green Turtle Cay in the Bahamas, real estate agent Karen Bertiger, could not place the call she needed to close a deal. Karen Bertiger, happened to be the wife of Motorola executive and engineer Bary Bertiger, and she convinced her husband of the need for a mobile wireless system that would allow people to place calls from any location in the world.

Bertiger began to wonder about building a cellular-like phone system but with the antennae in space, rather than on ground stations, like cellular towers. But how could it interface with the terrestrial system. He began to kick around the Iridium system with engineers at Motorola's Satellite Communications Group in Chandler, Arizona. In 1988, Bertigrer's colleague Raymond Leopold came up with the idea of gateway ground stations and Iridium plans to use 12 around the globe. Through the ground gateways the system will be able to work with existing terrestrial system and if those are not available phones will link directly to the satellites.

Motorola engineers began research and development in 1987 and in 1988 the Iridium gateway concept developed by Motorola engineers Leopold, Ken Peterson and Bertiger, as a way to coordinate satellites with "gateway" ground stations took shape, allowing them to connect to earth's telephone systems.

As well as the earth gateways, part of Iridium's novelty is to send signals to low altitude satellites rather than bouncing bandwith off of birds 22,300 miles high. Many technical inovations have spun out of the project. (The company has applied for well over a thousand patents.)

Iridium's original system was to have 77 satellites, so it was named Iridium an element with the atomic number of 77. The number of satellites was reduced to 66 but the company decided to stick with *Iridium* rather than rename itself *Dysprosium*.

With the goal of providing a global wireless telecommunications network, Motorola engineers tested many concepts before settling on a system using a constellation of low earth orbiting (LEO) satellites. For the system to work as planned, the satellites had to be small and simply constructed, so they could be built, launched and replaced economically. Market analysis confirmed that a strong potential market exists for a system providing high-quality voice service at reasonable rates. Market studies also helped determine the requirements for system capacity and financing.

In 1990 Iridium formally announced it's plans at simultaneous press conferences in Beijing, London, Melbourne and New York. Motorola filed for application with U.S. Federal Communications Commission (FCC) for Iridium System development.

In 1991 Motorola established Iridium, Inc. as a separate company to develop and deploy the network and the U.S. government reserved radio frequencies for low earth orbit satellites.

Iridium LLC became one of the first global mobile satellite wireless communications companies to gain full membership in the Global System for Mobile Communications (GSM) MoU Association, the world's largest wireless communications association in 1991. Becoming a full member translates to full voting privileges at the Plenary meetings, in the Association Steering Committees, and in working, technology and other specific interest groups. The

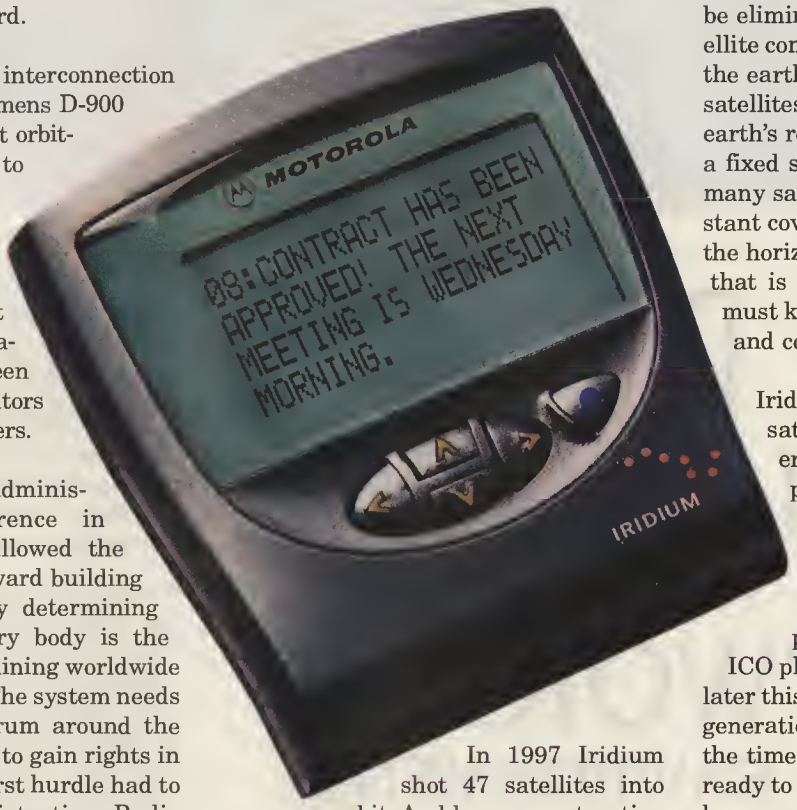
GSM MoU Association is an assembly of affiliated wireless network operators that utilize the GSM platform to enable wireless international roaming, unrestricted circulation of approved subscriber equipment, advanced security features, and consolidated billing among operators. The Association was established in 1987 to promote the GSM platform as a global standard.

The Iridium system's interconnection architecture utilizes Siemens D-900 GSM switches to connect orbiting Iridium satellites to terrestrial telecommunications infrastructures. This complementary functionality should enable efficient exchange of administrative information between Iridium gateway operators and GSM service providers.

In 1992 the World Administrative Radio Conference in Torremolinos, Spain, allowed the first regulatory step toward building the Iridium system, by determining that a global regulatory body is the proper forum for determining worldwide radio spectrum rights. The system needs to use the same spectrum around the world and is still trying to gain rights in some nations, but the first hurdle had to be the World Administrative Radio Conference. That year the company received an experimental license from the FCC for the system and signed a $3.37 billion contract with Motorola for system development, construction and delivery. Motorola became the prime contractor for the system building satellites, gateways, and end-user products.

But the believers had to raise more money. They went after the deep pockets of the telcos. But the telcos lacked the vision. After logging millions of air miles, company executives put together 17 entrepreneurs for investors. Eventually some big corporations like Sprint and Lockheed Martin caught the vision and signed on. Iridium completed its first round of financing, successfully raising $800 million in equity in 1993 and held its first meeting of the board of directors of Iridium, Inc.

In 1995 the FCC granted operational license for the Iridium system and the plan for a 1998 rollout. By1996 the company raised $315 million additional funds, bringing total project support to $1.9 billion, delivered its first satellite, and held its first gateway ground-breaking ceremony in Matsumoto City, Japan. The company also completed its Master Control Facility, in Virginia near Washington, DC.



In 1997 Iridium shot 47 satellites into orbit. And began construction and testing of nine gateways. Iridium board members received the first Iridium pager message delivered by orbiting satellites.

When an Iridium phone is activated it will signal the nearest satellite which will automatically determine the account validity and the user's location. The user chooses among the cellular or satellite transmission alternatives, depending on compatibility and system availability to transmit a call. The call is then transferred from satellite to satellite and to another Iridium phone or a terrestrial gateway to ground communications devices. The Satellite Operations Center in Lansdowne, Virginia, monitors and controls the satellites.

Two satellites that are in orbit have problems and are not considered part of the constellation. Six others will be deployed as backups and replacements. The company says that the software and hardware that links the satellites is unique and covers the globe and wherever the user is on the surface of the planet. In the past large and unwieldy phones were used to bounce off the satellites at 22,500 miles above earth. These huge, expensive satellites produced poor-quality, high-latency connections.

Closer to the earth means that delay can be eliminated and the echo in older satellite communications reduced. Closer to the earth also means, however, that the satellites do not stay in step with the earth's rotation so they do not appear as a fixed spot in the sky. For that reason many satellites are need to provide constant coverage. As one satellite drops off the horizon it hands a call off to another that is rising. Iridium's satellite NOC must keep track of the complex system and coordinate its functions.

Iridium may be the first low orbit satellite network, but several others are in the works. Loral Corp. plans Globalstar System and ICO Global Communications is planning a little higher altitude array of satellites. Globstar has eight of a planned 56 satellites in orbit. ICO plans to start launching satellites later this year. Iridium will have second-generation systems ready to launch by the time its nearest direct competitor is ready to start similar services of its own, however. And GlobalStar and ICO are said to be unlikely to start similar services before 2000.

By the time competing services begin, Iridium's second-generation INX project which began last year should be ready for deployment. These second-generation systems will not overcome the technology barriers to deliver megabits any place in the world, but they will be in advance of anything from rival operators, and they do represent a new era in communications, one that will have serious ramifications for the ISP industry. ◆

by Eric Lee

PRIVACY CHALLENGES IN THE NETWORKED ENVIRONMENT

Eric H. M. Lee is public policy director of the Commercial Internet eXchange (CIX) Association. He joined CIX in early 1997, from AT&T where he held positions in AT&T's Law and Government Affairs office, AT&T International, and AT&T External Affairs.

Before joining AT&T, he was legislative assistant to Senator Daniel K. Inouye (D-HI) and counsel on the Subcommittee on Foreign Commerce and Tourism of the Senate Commerce Committee. He received his undergraduate degree in Modern East Asian History at Princeton University and his law degree from Harvard Law School.

Lee was an official consultant at the United Nations Seminar on Racism and the Internet held in Geneva in November and was a member of the United States Delegation to the OECD ICCP meeting in October. He has also spoken at the PTC '98

In late January this year, the news media revealed that an AOL customer service representative had spoken to Navy investigators and revealed customer information in contravention of AOL's privacy policies. That revelation caused a national media furor, including front-page stories in Hawaiian newspapers, where the sailor/customer was stationed. It also earned AOL a black eye in the gay community, finally leading to a public apology from AOL chairman Steve Case. This incident vividly demonstrates that few issues generate greater public interest or more impassioned debate than personal privacy and perceived threats to it. Privacy issues periodically appear in the national public policy arena, reflecting the country's psychic temperature. We are in the midst of a resurgence of concern about personal privacy and renewed interest in proposals to limit the collection, sale, dissemination, and use of personal information.

Washington was astir this past spring with multiple privacy-related meetings, working groups, and conference calls. More than two years after then-FTC Commissioner Christine Varney chaired the first privacy workshop, the Washington public affairs community appeared convinced that the Administration seeks major changes to strengthen the current privacy self-governance regime, including the possibility of legislation. The business community faces critical tasks of satisfying the U.S. government's and citizens' fears and foreign governments' suspicions of self-governance solutions.

Several events during the first half of the year were particularly noteworthy. Just a few days ago, on July 1, the Department of Commerce was to deliver to President Clinton, a report analyzing U.S. privacy policies and practices that he requested last year. In early June the FTC was expected to send to Congress a report on its survey of Web sites' privacy practices. The survey of 1,200 plus sites found that the vast majority did not voluntarily post their privacy policy where it would be readily accessible to consumers. Although the percentage of compliant sites had increased slightly since the last survey, the results are disappointing, as some critics are likely to claim they demonstrate that industry's preferred option does not or cannot work. Also significant was the Commerce Department's expected two-day conference in early June for stakeholders to discuss the Department's draft on "Elements of Effective Self Regulation for Protection of Privacy," their concerns, and sector specific issues. Internet privacy was one of five designated meetings. It was attended by service providers, association executives, children's advocates, civil libertarians, telcos, and content providers. Particularly sensitive is the collection of personal data from children at Internet sites for marketing purposes. Such practices were one of the causes for the original FTC privacy workshop and continue to distress parents, educators, and children's advocates. Judging from comments at the Commerce Department meeting, it is likely that children's marketing practices will be subject to new government regulation.

The most significant development of the spring was the private sector's announcement in late May to create a new umbrella group, the Privacy Alliance, to help flesh out the components of a more effective self-governance privacy regime. The Alliance consists of companies and associations of varying sizes that are united in their preference for effective private sector solutions. The window of opportunity may close unless the private sector moves quickly to prove its good will and the superiority of its proposals. The Alliance is open to new members and can be contacted at `www.privacyalliance.org`.

There are several reasons for the current public awareness of data protection and privacy issues:

Information technology greatly facilitates the collection, distribution, manipulation, and use of personal information.

Some industries and companies have been involved in highly publicized and unpopular, if not clearly illegal, practices that have unleashed unfavorable publicity.

Public opinion, as measured by polls, clearly reflects a sense of disquiet and concern. A March 16, 1998, Harris/*Business Week* poll showed that the principal reason cited by the public for not using the Internet was a concern about privacy and that half of the respondents cited privacy concerns.

Independent agencies like the FTC have stepped up their monitoring of information practices, especially with regard to the collection of information about children. The Clinton Administration has urged improvements in U.S. policies and practices, preferably through private efforts, and has warned that new laws and regulations may be necessary if voluntary private sector initiatives fail.

Mass media coverage of the issue has been intense.

Finally, increased data protection activities abroad, notably in the EU, have stimulated U.S. business and government officials to re-assess U.S. policies and practices. However, most of the pressure for changes in U.S. privacy and information policies and practices originated domestically — not from abroad.

At this point, a short history might help shed light on these events.

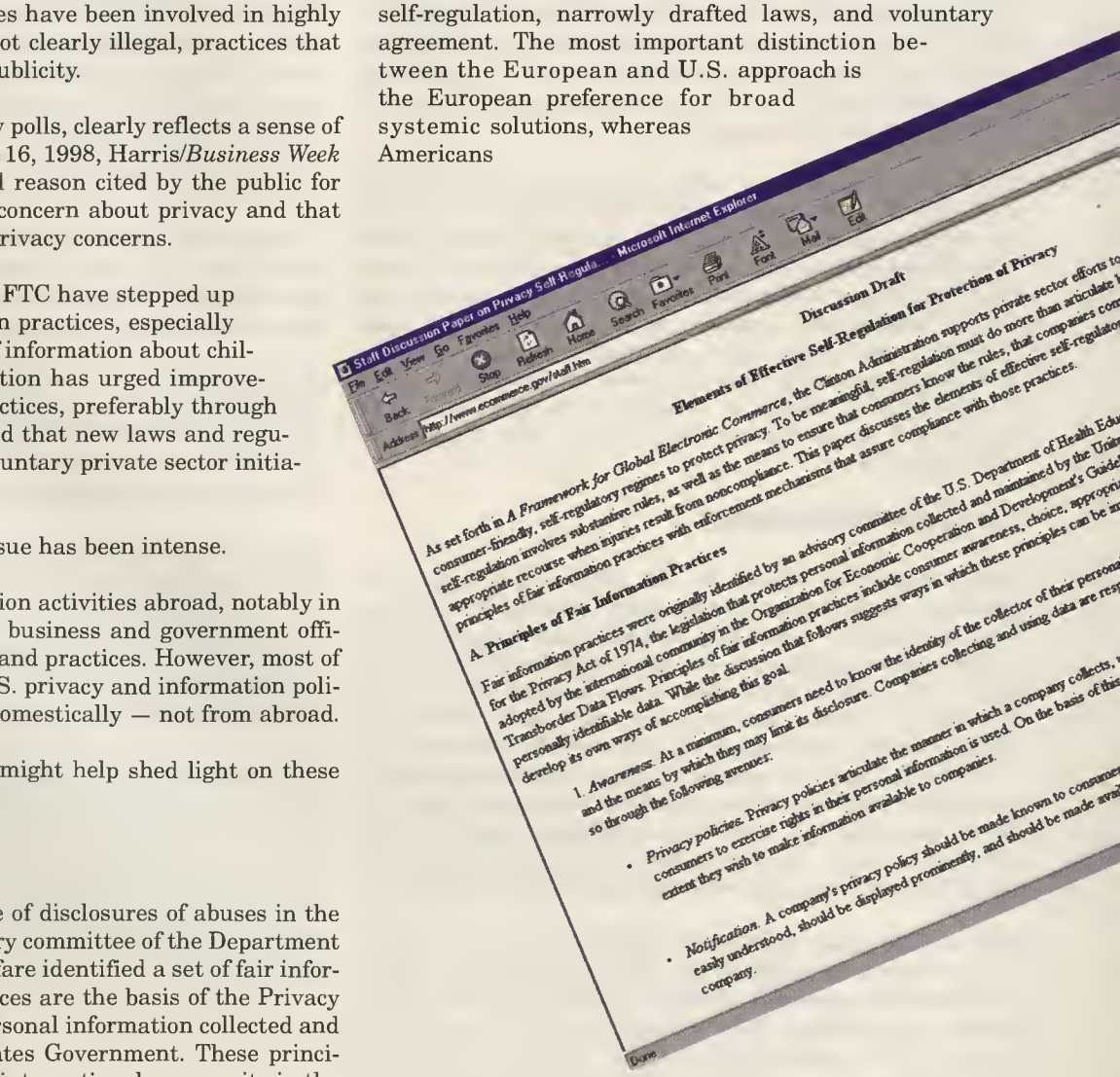
RECENT HISTORY

During the 1970s, in the wake of disclosures of abuses in the Nixon White House, an advisory committee of the Department of Health, Education, and Welfare identified a set of fair information practices. These practices are the basis of the Privacy Act of 1974, which protects personal information collected and maintained by the United States Government. These principles were later adopted by the international community in the 1980 Organization for Economic Cooperation and Development's (OECD) Guidelines for the Protection of Personal Data and Transborder Data Flows (simply referred to as the OECD privacy guidelines).

A decade later in 1986, the U.S. enacted the pioneering Electronic Communications Privacy Act (ECPA) to limit government access to electronic communications such as e-mail. (CIX has posted a legal memorandum on explaining ECPA prepared by its counsel Ron Plesser of Piper Marbury at its web site `www.cix.org`.) This farsighted law, adopted when the commercial Internet lay in the distant future and when few Americans had even heard of — much less used — e-mail, remains the foundation of online privacy law. History will show that the U.S. forged new directions in privacy policy and provided intellectual leadership for much of the world.

A shared respect for privacy disguises fundamental differences between American and European laws, practices, and philosophies. There is no consensus about what privacy is, the values served or impaired by extending legal protection to privacy, or the principles that will be affected by current or proposed measures or the enduring principles that might be enshrined in international law.

U.S. privacy and data protection laws are fragmented and inconsistent as might be expected from the U.S.'s reliance on self-regulation, narrowly drafted laws, and voluntary agreement. The most important distinction between the European and U.S. approach is the European preference for broad systemic solutions, whereas Americans



prefer narrower, more targeted answers. In the U.S., it is assumed that almost anything that is not forbidden is permissible. Europe and America also differ in their respective attitudes toward government. In Europe, privacy protection is employed against businesses and other private individuals, while in the U.S., government is deemed the foremost threat to civil liberties. Finally, European regulation tends to rely on formal organization, procedures, and structures. In the U.S., there is a general preference for self-governance and private sector leadership wherever possible. As we see, this divergence in approaches could cause economic, political and social friction between the U.S. and EU.

The U.S.'s private sector model for data protection policies is being seriously challenged abroad and domestically. In 1995, the European Union adopted a historic Directive on Data Protection that will take effect in October of this year. The Directive prohibits the transfer of personally identifiable data out of the European Union to any country whose data protection laws are judged "inadequate." If U.S. laws are found "inadequate" and if the Directive is strictly enforced, that could disrupt the operations of U.S. firms with European affiliates or any U.S. business that might handle personal information. In response to this potential threat, the U.S. government stated it would complain to the World Trade Organization if the Directive were implemented in a manner that injured U.S. firms. At the same time, the U.S. government understands that U.S. firms must help themselves if the self-regulatory model is to succeed.

Pressure for more effective self-regulation is primarily domestic, but the EU Data Protection Directive increases the stakes and complicates the resolution. The interplay between international and national currents creates an interesting conundrum. If U.S. multinationals fear that American privacy laws may be "inadequate" to satisfy the EU Directive, then what does that say about their usefulness in the U.S.? The Administration already has its answer. It has posted a proposed "elements" paper on effective self-regulation on the Department of Commerce Web site at `www.ecommerce.gov/staff.htm`.

FOCUS ON THE INTERNET

Some groups have singled out the Internet for special condemnation in the privacy debate, partly because it is a convenient and popular target and partly because some Web site operators have aggressively sought personal information from children. In contrast to the huge sums involved in the financial services industry and the importance and sensitivity of medical records, the misdeeds of a few Web site operators seem — and are — tiny by comparison. The prominence accorded to the Internet reflects the Administration's conviction that electronic commerce will have a revolutionary impact on the American economy and that public trust in effective information policies and practices will stimulate e-commerce growth.

With the sole exception of AOL's highly embarrassing release of a member's information to naval investigators, service providers have generally escaped criticism of their privacy policies and practices. ISPs may not have much more information than subscriber billing records — unlike OSPs(Operator Service Provider). ISPs that serve educational institutions or businesses are likely bound contractually from releasing or misusing customer information. Nevertheless, those ISPs that do not serve the dial-up market or have few dealings with the general public could be adversely affected if regulations were imposed on all Internet vendors.

That the Internet has come to symbolize for many the inadequacy of U.S. information policy is regrettable as well as potentially dangerous for ISPs. Some policy makers have little understanding of the many different roles performed by the multitude of Internet vendors, the Internet's basic architecture or the differences in the ISP market. ISPs' visibility to end-users makes them a potential target for inclusion in legislative proposals as the default guarantor of public policy decisions. The lack of technical understanding presents yet another danger since impractical ideas may be proposed from sheer ignorance. Indeed, the most common mistake by elected officials and their staffs is to confuse ISPs with OSPs and to assume that AOL's network is an extension of, but similar to, the Internet. Such misunderstandings can have important real world consequences. Education of members of Congress and their staffs has been one of CIX's major priorities.

ISPs serving only commercial accounts may not be able to avoid regulation if the business community fails to recreate a successful, functioning, and effective self-governance model and a new mandatory privacy statute is the outcome. The Washington business community is still months away from resolving its disagreements over information practices even under the best circumstances. In the meantime, ISPs with substantial interactions with the general public should read the short draft "elements" paper on the Department of Commerce's Web site and may wish to consider the following actions in light of the debate on information practices.

The provider's privacy guidelines should be posted on the home page and clearly labeled. You may wish to update them as necessary so that they are accurate and timely. Netcom's are a solid model of directness and simplicity.

Privacy references in an ISP's terms of service should receive special attention. From time to time, the Web master may wish to raise privacy issues in communications with subscribers as evidence of your awareness of this issue and its significance. Consumer and user education should be important objectives.

Many ISPs also provide hosting services or design and build Web pages in addition to providing access. Clients may appreciate receiving your advice about the desirability of good privacy principles, including incorporating guidelines on the home page early in the design process. Children's marketing is particularly sensitive. They should be aware of governmental concerns and possible regulation in this area.

The outcome of the privacy debate in Washington and other world capitals is going to affect everyone. It is critical that ISPs — as the public's connection to the Internet — understand why the Internet plays such a prominent role in these discussions and how to deal with the public's and governments' concerns. The U.S. business community has the opportunity to affect its fate and it must assume that leadership role. ◆

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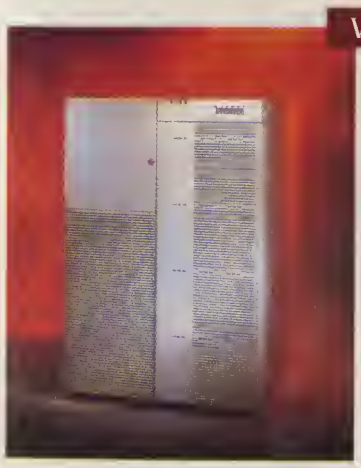

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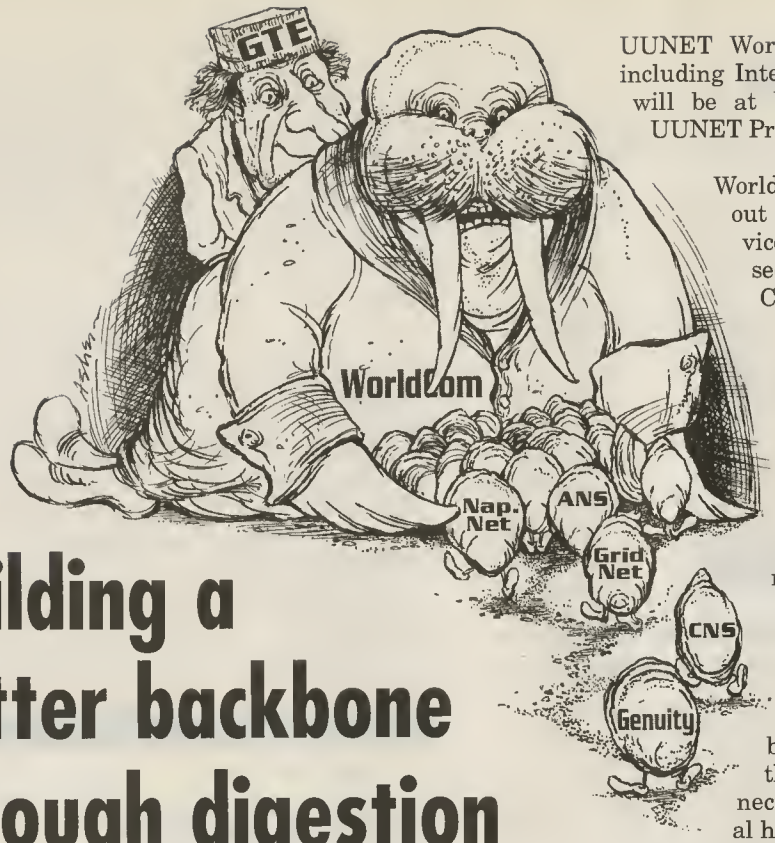


Building a better backbone through digestion

By Greg Tally

Peter Van Camp
Compuserve President

BOTH WORLDCOM AND GTE REWORK THEIR HOLDINGS FOR COMPETITIVE EDGE

Deciding that the sum of their parts might work better with fewer pieces, two major players in the backbone industry are shuffling the decks on their subsidiaries. Both WorldCom and GTE Internetworking are transforming their corporate structures and networks, digesting several smaller companies in the process.

UUNET has grown rapidly after a three-year binge of mergers and acquisitions. During the summer of 1996, UUNET joined forces with MFS Communications Co. in a merger valued at nearly $2 billion. By winter 1996, WorldCom, Inc. acquired both MFS and UUNET in the fourth largest merger in corporate history. Over the past winter, WorldCom also orchestrated a three-way transaction in which WorldCom/UUNET acquired the infrastructures of ANS and CompuServe and secured a multi-billion dollar, five-year contract with America Online.

After some head scratching over what to do with its many holdings, WorldCom decided to absorb several of its companies into a newly-formed Internet and Technologies Division. Headed by UUNET CEO John Sidgmore, the division will consist of two parts: UUNET WorldCom and WorldCom Advanced Networks.

"These moves are patterned around the two companies with the most momentum and definition," said CompuServe President Peter Van Camp. "We're eliminating redundancy and reordering our key products and services."

UUNET WorldCom will offer IP network-based services including Internet access and IP telephony. Its home offices will be at UUNET's headquarters in Fairfax, Virginia. UUNET President Mark Spagnolo will head up this section.

WorldCom Advanced Networks will be formed largely out of CompuServe's value-added networking services, including managed virtual private networks, security and hosting. Its headquarters will be at CompuServe's command center in Hillard, Ohio.

The restructuring should benefit ISPs through lower costs and uniform pricing, said Van Camp, who will lead WorldCom Advanced Networks.

ANS and GridNet's days as distinctive companies - and separate networks - are numbered. Until now, ANS has focused on Internet connectivity for America OnLine and peddling managed security, dial-up access, intranets and extranets. GridNet has specialized in custom network services, remote access and the Internet.

WorldCom will fuse ANS and UUNET's dial access networks into an integrated IP backbone by the end of 1998. This means combining the ANS mesh of DS-3 45 Mbps circuits interconnecting 18 transit node POPs into UUNET's regional hubs of OC-12 and DS-3 trunks.

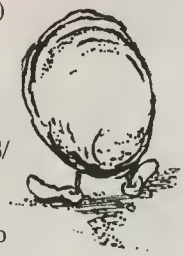
CompuServe's Managed Network will connect to the WorldCom ATM backbone, eliminating some of the redundant backbone circuits currently provided by AT&T and MCI.

GridNet and ANS will primarily be integrated into CompuServe Network Services, except for the dial portion of ANS and the Internet services from GridNet. Compuserve's DS-3 mesh will be wired into GridNet's DS-3 level backbone.

Van Camp said WorldCom's streamlining should not translate into office closings and layoffs: "We actually have a need for real estate. We're setting up a NOC (network operations center) in Ann Arbor, Michigan. And we will increase our headcount in the two companies by year's end."

None of the WorldCom restructure is contingent upon its proposed $37 billion merger with MCI, currently under scrutiny by a gaggle of Federal agencies and the European Union.

For its part, GTE Internetworking is busy bear-hugging its subsidiaries, Genuity and Nap.Net, to the parental bosom. Nap.Net will continue as a product line (but not a subsidiary company) under the GTE logo.



Nap.Net, a national wholesale provider of Internet access to ISPs and universities, utilizes the LDDS/WorldCom ATM network for its primary system of backbones. Nap.Net will likely be absorbed into GTE's infrastructure sometime in the future.

Genuity is already fully integrated into the organization. The Genuity grid of independent SONET-based, fully-meshed DS-3 and OC-3 ATM network have been hooked into GTE's connections. ◆

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TUCOWS

Scott Swedorski

MAKING INK - PROMOTING YOUR SOFTWARE OR WEB SITE

Scott Swedorski is president and founder of TUCOWS, The Ultimate Collection of Winsock Software. He lives in Flint, Michigan with his wife, Vicky and 2 daughters, Emily and Ashley. After joining the army at the tender age of 17, Scott received his degree in Computer Information Systems from Mott College, and received an Honorable Discharge after 8 years service. Scott welcomes input from Internet users and software developers at tucows@tucows.com.

In a recent column on TUCOWS, Brandi Jasmine, our Grazing Grounds writer, offered tips for promoting your web site or software to the media. She pointed out that many developers have strong (and often mistaken) notions about the press - particularly those who find it difficult to get their products noticed. "It's not fair!" is the oft-heard lament. "The big guys get a lot more coverage, and our stuff is just as good."

"Life's not fair but that's the way it is," she replied, and she's right. Big companies with huge PR budgets do often get a disproportionate share of publicity. But being small can actually be an advantage. Smaller companies can move more quickly to take advantage of changers in the marketplace, and the Internet is the great equalizer ... providing you know how to move fast and take advantage! Here are some tips and tools to help you even the score.

AddSoft

Version Number:	1.20c
Revision Date:	March 14, 1998
File Name:	addsoft.exe
Byte Size:	723,582
License:	Shareware
Cost:	$69
Home Page:	www.cyberspacehq.com /addsoft
Also Available:	Windows NT Version

AddSoft is a handy software submission tool that allows software developers to submit programs to 55 software distribution sites across the Internet. AddSoft makes the job simple, taking the chore out of multiple submissions and frequent updates. It automates submissions for every shareware site it supports, builds submission data based on each sites requirements, and it Zips, FTPs, e-mails, and posts HTTP.

Tip #1: Even if you are not selling software, you can still "create" an application or a "e-book" that you can submit to file archives. These "programs" you create can function as one more way to get your name in front of your audience. If it's unique or particularly compelling, it will actually drive traffic to your site. Make sure to include a "readme" file with your URL and e-mail address.

AddWeb offers a higher placement than most do-it-yourselfers. The unregistered version gets you the top

AddWeb

Version Number:	2.36
Revision Date:	March 31, 1998
File Name:	addweb.exe
Byte Size:	1,005,966
License:	Limited Shareware
Cost:	$49
Home Page:	www.cyberspacehq.com/addweb
Also Available:	Pro Version, (1,298,184
NT Compatible:	Yes

nine engines, but register and you get 355. Several useful tools are included, such as page creation for better placement, updates of search engine data, batch processing, and more. You can even find out quickly how well your site ranks with certain keywords, so you can better tailor your submission.

SubmitWolf PRO

Version Number:	3.06 Build 007
Revision Date:	April 3, 1998
File Name:	swolf307.exe
Byte Size:	899,584
License:	Shareware (200 uses)
Cost:	$65
Home Page:	www.msw.com.au/swolf
Also Available:	Windows NT Version

SubmitWolf PRO is a professional quality web page promotion robot with a database of over 1,000 Internet search engines, and 700 fully automated submission scripts. It generates detailed reports and maintains a comprehensive submission project history.

It also features an engine profile editor, which will enable you to create your own automated submission scripts for any engine on the net.

Tip #2: Make sure that you are careful to select only those search sites that are relevant to your site. I know of a webmaster compiling a list of Canadian sites that was recently bombarded by hundreds of irrelevant submissions from all over the world. It turned out that the submission software did not specify "Canadian Content Only" (the submission software was not a TUCOWS application). Unfortunately for this webmaster, the software was mainly set up on a CD ROM.

One good way to generate interest in your sites and products is to create e-mail newsletters and press lists,

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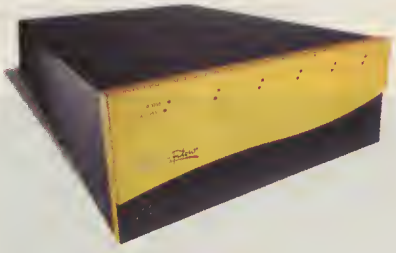

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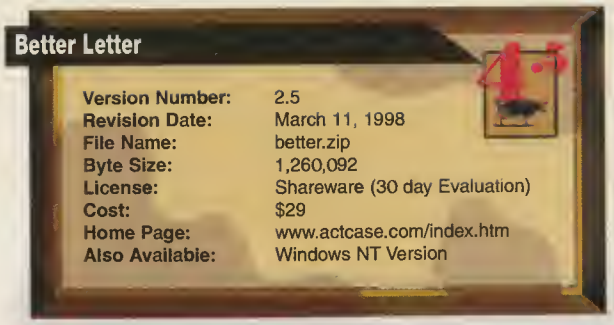


but managing subscribers and complicated server-side list servers can be a serious headache. Better Letter requires no server-side CGI or scripts, it runs entirely on your Windows 95/NT desktop. **Better Letter** monitors your e-mail account looking for people who want to subscribe to your newsletter, and sends auto-replies to users as they add and remove themselves from your mailing lists.

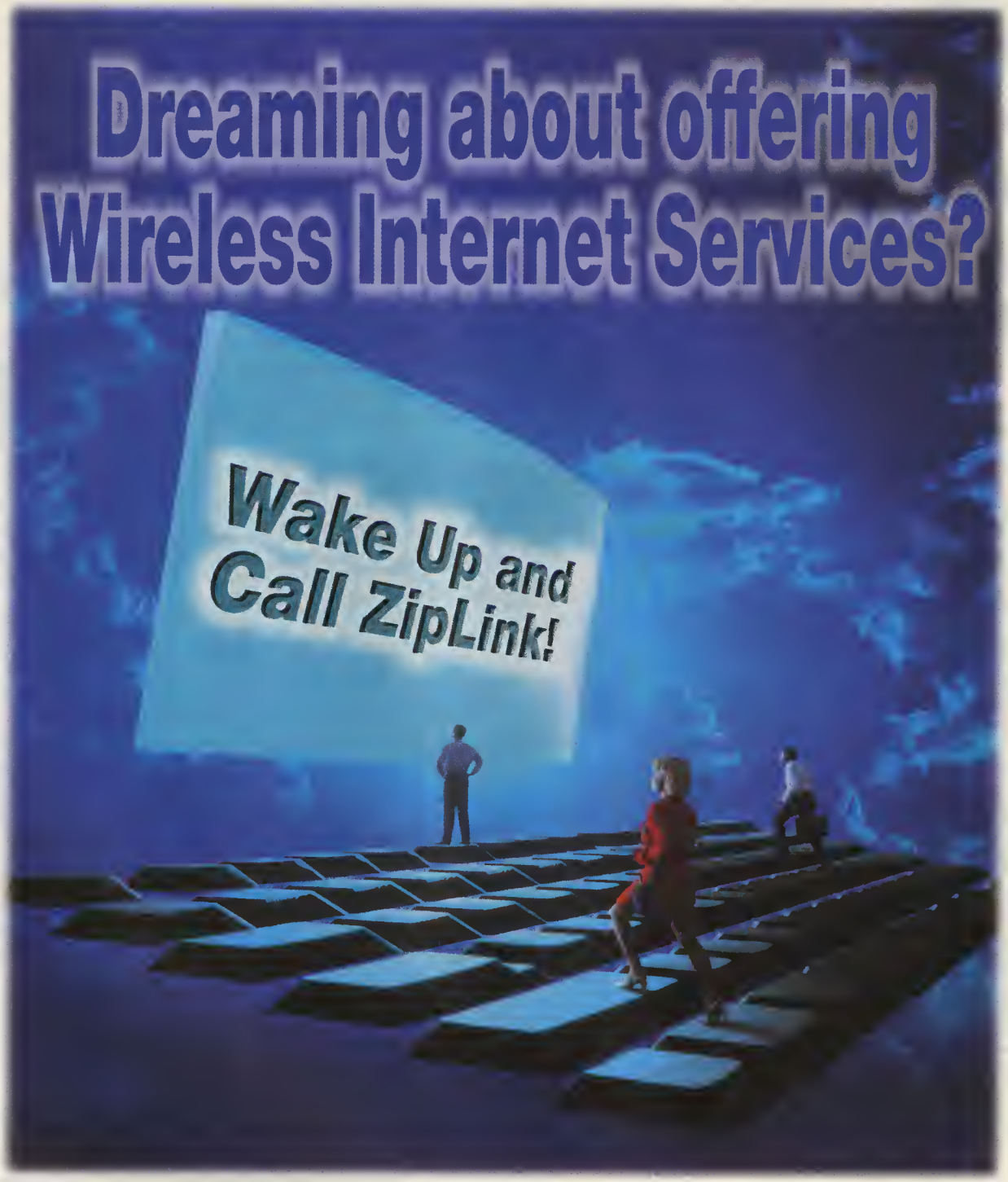
Tip #3: It's a good idea to develop your own press list - but pick and choose your contacts carefully. Most editors tell us they don't mind getting unsolicited press releases - provided they are targeted to their publications. "The editor of *Home and Garden* or *Bridal Weekly* is not going to be interested in your e-mail filtering program even if 10 percent of brides and home decorators are now using e-mail," Brandi says. "I used to work for a small community paper, and we used to get press releases every week, like clockwork, from some pharmaceutical company down the road. It was mainly a nuisance, and occasionally a source of amusement . . . but they were never published in the paper."

By the way, be careful when ordering e-mail press lists from "list-selling" companies - we bought one once, and while 90 percent of the contacts were excellent, only 30 percent of them were useful, and most were on the list we already compiled. We were fortunate to do so well - not all of these list sellers are legitimate. We've heard horror stories from people who bought what they were told was a "qualified list" (meaning that everyone on it was OK with unsolicited e-mail) only to find their "In" box filled with complaints the next day. When your mail-outs are press releases, it is a good idea to write a letter to the editor in question. Introduce yourself. In one paragraph, tell him what your company is about. Then offer your releases. Make sure you have an "opt-in" policy, and respect those editors who choose not to reply - subscribe only those who respond positively to your introduction.

Remember to respect the "new" in News. A lot of companies send out spam disguised as press releases, and this is a surefire way to destroy your credibility. Never make a sales pitch in a press release! Keep your releases down to one or two a month, unless you have some really spectacular news.

You don't have to spend thousands of dollars to get media attention, but you do have to expect to cover postage, and be prepared to send the full registered software, with any manuals you may have. We've occasionally reviewed the demo or crippled version of a product for TUCOWS, only to find bugs and unpleasant "undocumented features" popping up in the registered version. Our readers hold us responsible if we don't catch those mistakes.

Finally - the most important tip of all: If you are trying to promote Internet software, remember to submit it to TUCOWS! `http://tucows.idirect.com/author.html`. ◆



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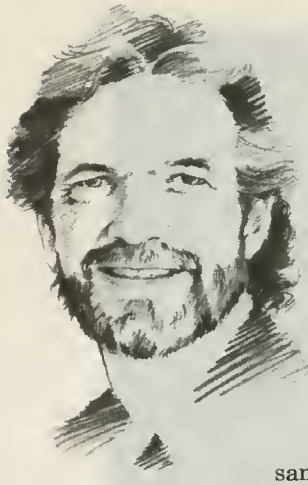


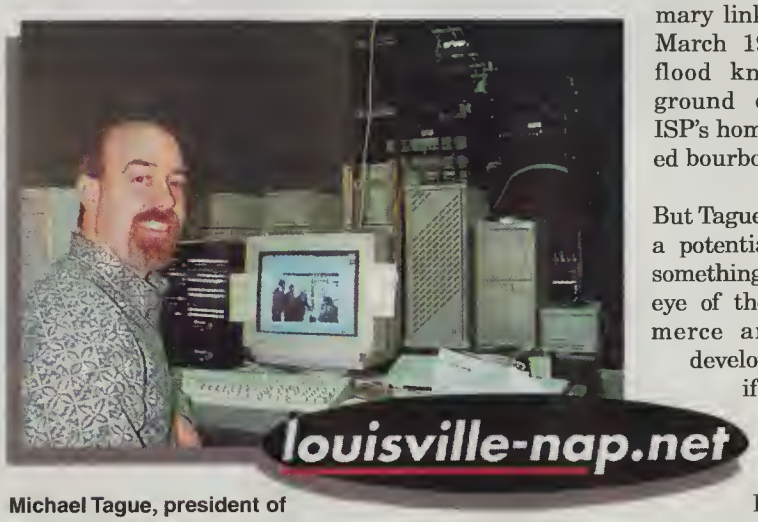
MANNING THE WIRES

by Ric Manning

LOUISVILLE ISP THROWS A PEERING PARTY BUT FINDS FEW PROVIDERS WANT TO DANCE

Like many brainstorms, this one started late at night. Michael Tague, president of Win.Net Business Internet, a Louisville ISP, was on the Web sampling some of the online features in his hometown. The server at the University of Louisville, he discovered, contained video files from *The Bottom Line*, a television show produced by the university's school of business.

At 3 a.m., the video was crisp and clean, almost like a live broadcast. Suddenly, the talk about multimedia and distance learning on the Internet seemed to make more sense.



Michael Tague, president of Win.Net Business Internet

But when Tague called up the same files the next afternoon from his office, everything was different. The video was blurred and choppy. Every few seconds the connection would break and Tague would have to wait for the data stream to catch up.

How could the link be so bad? After all, the university was only a couple of miles away from Tague's office. The answer was in the routing. Win.Net uses Sprint to connect to the Internet and the university uses BellSouth. When he traced the connection, he counted 17 hops between two points that were only a few blocks apart.

"The signal was going from Louisville to Atlanta to Chicago to Indianapolis and back to Louisville," he said. "There can be as many as 10 to 20 hops and 2,000 to 3,000 miles between providers. For low-volume applications like e-mail, that doesn't matter. But for higher bandwidth applications like streaming audio or video it can make a big difference."

What Louisville needed, he thought, was a place where local ISPs and servers could all plug in and exchange local traffic. Nine months and $300,000 later, Tague snipped the ribbons on the Louisville NAP (`www.louisville-nap.net`) housed in a downtown office building near BellSouth's Kentucky headquarters. The system uses a Bay Networks router capable of handling up to 40 DS-1 lines.

Tague said his primary goals for building the NAP were business concerns. He wanted more bandwidth capacity for Win.Net's growing Web-hosting business. The NAP also provides a back-up link to the Internet if Win.Net should lose its primary link. That happened in March 1997 when a record flood knocked out underground cables outside the ISP's home office in a converted bourbon warehouse.

But Tague also saw the NAP as a potential community asset, something that could catch the eye of the Chamber of Commerce and local economic development officials. What if all the major local ISPs plugged into Win.Net's routers? Wouldn't that make Louisville's local Internet connections faster, better and more reliable? Louisville officials could then brag about the city's data services the way other communities brag about their highways and airports.

Tague also figured that the NAP could give Win.Net and other local ISPs an edge in competing with national providers. "Our competition isn't each other, it's AOL and MSN," he said.

So Tague issued an open invitation: Any local Internet provider could plug into the Louisville NAP for free. The only cost would be the expense of running a DS-1 connection from their servers to the NAP. Tague said the other ISPs could even use his DS-3 as a temporary backup Internet connection if their own links went down. Tague said he also offered to keep Win.Net's name in the background so the NAP could be seen as a cooperative venture, rather than as Win.Net's project.

Perhaps, not surprisingly, it hasn't worked out that way. When the NAP went online in late April, only one other ISP, a company that was already peering with Win.Net, was plugged into the new router. Three other small services say they are seriously considering using the NAP, but Louisville's two largest local ISPs — IgLou and ntr.net — have indicated that they are not ready to participate.

Ric Manning is a columnist and web master for ***The Courier-Journal*** in Louisville, Kentucky. His weekly column covers computers, consumer electronics and the Internet and is distributed to more than 100 newspapers by the Gannett News Service. It's also available on the World Wide Web at **http://courier-journal.com/gizweb**.

Ric was the founding editor of ***Plumb*** and ***Bulletin Board Systems,*** two newsletters that covered the BBS arena in the early 1980s. His freelance work has appeared in several magazines including ***PC/Computing, Mobile Office, PC Week*** and ***Home Office Computing.*** Ric lives in Southern Indiana with his wife, two children and two Weimaraner dogs.

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MICROSERVER

its benefits in the future (if you so desire). The program is Integrity Master from Stiller Labs (www.stiller.com). A brief sojourn to this Web site will prove to you the value of this product and the documentation alone is worth the download time. Take the time, you'll be glad you did — I would not operate an Intel-based system without it." Bill adds that he "has no financial, or other, interest in Stiller Labs."

Mike Branzuela swears by Trend Server Protect with PC-cillin which he says caught and cleaned viruses the other scanners didn't see. He notes, "Perhaps having to suggest three virus scanners (for me anyway) may not be conservative enough. Our Windows NT server endured a viral blue screen death. Efforts to resuscitate by the name brand virus scanners we rushed out to buy were futile. We had to rebuild — without a good back-up. Five days later, we were alive again and obsessed with protecting our data.

John M. (Mike) Curran notes that I missed one important place to find information on viruses. "The Department of Energy has a site at Livermore, CA. (http://ciac.llnl.gov/) which contains a wealth of information and which is open to the general public. It is called CIAC which stands for Computer Incident Advisory Capability. You may also sign-up to receive their bulletins via e-mail. In additions to virus alerts it also publishes vulnerability alerts on all major platforms."

SYMPATHY FROM OTHER VICTIMS

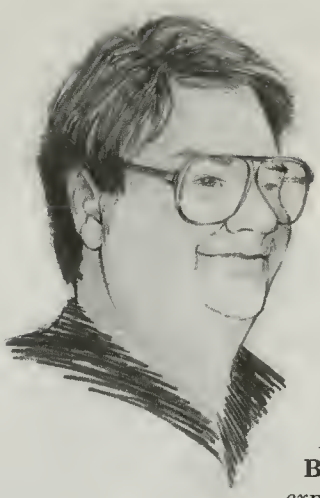
Aside from the advice and suggestions, I also received a number of messages from people who have suffered from disasters similar to mine.

Kevin Salisbury had a similar experience with the Stealth B virus, which he brought home on a floppy when exchanging some Lotus 123 files with a friend.

A fellow identifying himself only as Doc, sent me a message thread/exchange on alt.conspiracynewsgroup. It contained much of the same information already covered here. Unfortunately, space prevents me from printing it. I do thank Doc for sending it along.

Viper (no further identification) related the story of a virus war he had with someone which "crashed my system dozens of times," resulting in a big repair bill (new hard drive and RAM). Viper is not sure how many viruses he got in the exchange. He stopped counting at 30,000! All this apparently started because he, "refused a banner request off my site and ticked someone off." Now that's scary!

My thanks to everyone who took the time to write me with suggestions and comments. Your experiences and recommendations have certainly helped me. I have no doubt that they will also help others. In the future, I will look at the virus scanners suggested by readers and mentioned here. ◆



WIRELESS Data Developments by Steve Stroh

ALICE IN WONDERLAND WASHINGTON

This month, I'm turning this column over to Col. Dave Hughes of Old Colorado City Communications. Col. Dave is no stranger to long time readers of **Boardwatch** *(in a phone call, Dave explained just how FAR back his relationship with* **Boardwatch** *goes - way, WAY back). I've previously written of the National Science Foundation's Wireless Field Tests being conducted by Old Colorado City Communications (*`www.oldcolo.com`*), and I continue to recommend browsing their web page to get solid, non-hyped information on how unlicensed wireless data systems work in the real world. This text was written by Col. Dave shortly after the conference ended, and was posted to the Wireless-Data mailing list by subscriber Earl Green. My thanks to Earl for posting this, and to Dave for allowing the use of his words below.*

By Dave Hughes

Well, the NSF-GWU (George Washington University) sponsored Emerging Wireless Conference I organized, is over. Two intense days — nearly 50 speakers and panelists wrestling with wireless, satellite technologies, public policies, and distance learning with them. It is the first such conference that brought satellite gurus together with the advanced non-commercial-service wireless experts and those together with FCC, NTIA, and White House staffers.

Somewhat to my surprise, there was unanimous agreement by those attendees who stuck it to the end, to do it again next year.

While not particularly intended, the most eye-opening sessions were either about (1) little known but spectacular applications of wireless to the most difficult regions of America, (2) equally little known technological developments and analysis that challenges the telephone-company assumptions upon which all public policy is based and, (3) the almost *Alice in Wonderland* atmosphere that was created when FCC and NTIA panelists mixed with practitioners of the "emerging wireless" arts.

Many attendees became so frustrated with the nearly irrelevant — to the real telecommunications world they live in — presentations and answers to questions by FCC and NTIA staffers. At the end, they seriously suggested we drop all Federal agency persons from a future conference. (Not knowing that it is the policies of these agencies, or the Catch-22 laws, that are the greatest obstacle to the flowering of these new and incredibly cost effective technologies. And that one purpose of the conference was to educate the working staffs of those agencies.)

One classic exchange came when, after three staffers from the FCC and the School Libraries Corporation (SLC) made their presentation on how the Universal Service Fund worked, and what was eligible and what was not, and Mike Willett, one of the most sought-after integrators and installers of wireless networks for schools described the project he is working on right now.

The State of Colorado had less than $2 million to allocate to link up 70 schools in the southeast farm country corner of Colorado, including reliable voice telephone service in tiny towns who don't have it now to decent speed connections to the Internet. The consortium of towns and school districts first got bids from telephone companies to do the job. Then they brought in Mike, who bid the entire project, using modern microwave systems, no-license wireless, and associated mux and other terminating equipment, as a private, regional telephone and data network. He showed he could do it for the $2 million available, with minimum data service of T-1 speed to all schools, with NO recurring monthly costs, except incidental maintenance.

On the other hand, the telephone companies said they could not reach all the schools, but could build to most of them, and a backbone. Which would cost $500,000 a year. Endlessly.

But this is the Catch-22. The Universal Service Fund — designed and intended by Congress to connect ALL U.S. public schools and libraries by subsidies, with the principles of (a) universality, (2) technology neutral, and (c) competition — CANNOT be applied for by the schools to help pay for an advanced and total arrangement, but WOULD pay for the incredibly costly partial telco arrangement — which, however, would have to be applied for every single year, thus risking the eventual cut off of the USF program.

The FCC staffers simply had no answers to that spectacular, real-world school connectivity riddle. Nor could they even answer the question as to whether the problem was inside the FCC's interpretation of the law, or the law itself!

Also, the federal staffers did not stay around for an incredible story at lunch, brought 5,700 miles by Red

Steve Stroh's first exposures to wireless data and networking resulted from experiences with Amateur Packet Radio (callsign N8GNJ), and later TCP/IP on Amateur Packet Radio using Phil Karn KA9Q's NET and NOS implementations of TCP/IP for DOS PCs. Steve is active in TAPR-Tucson Amateur Packet Radio (`www.tapr.org`) and is a founding-member and a member-at-large of the Puget Sound Amateur Radio TCP/IP Group (`www.strohpub.com/psartg`). Professionally, Steve is a system administrator. Steve maintains a web page related to his columns at `www.strohpub.com/boardwatch`. Steve runs a mailing list to discuss wireless data and networking.To subscribe, send an e-mail to: `majordoo@mailinglist.net`, and in the body of the message (no subject needed) put: **subscribe wireless-data**.

Steve lives in Woodinville, Washington, with his wife Tina and daughter Merideth. He can be reached via e-mail at `mailto://steve@strohpub.com`.

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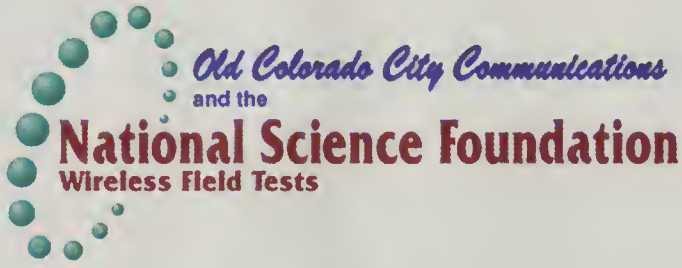
Boucher, ex-lieutenant governor of Alaska. Boucher owns Alaska Wireless, and has been, for years, trying to help connect the schools, local government, one-person health clinics, businesses, and the 325 remote severe-weather native villages (with, like, 100-500 populations) to the rest of the world with reliable voice and data services.

On prime example is Tooksook Bay, where the most progressive telecommunicator pays over $7,200 a year for a dial-up AOL connection, that is, *when* he can get dial tone from the shitty satellite delivered telephone company. To make matters worse, the phone company opposes the use of a $700,000 TIAP grant for extending data services to the schools of the 40 villages in one region — on the ground that the laws and FCC rules make it illegal to offer competing services with Federal funds (not USF funds) at lower costs where there is "already" service!

While Red's power point luncheon speaker presentation was later, the wireless division's staffers from NTIA were still on the panel when Red presented THAT catch-22 in an audience-microphone question for them, for which they had NO answer. The staffers could only 'invite' him to come into Commerce and talk to them.



Which he will do enroute to Senator's Stevens (R-AK) offices to ask his close friend Ted to intervene in the bull that, while proclaiming Administration support and programs to connect all schools, libraries, and health services, the public needs, in fact, are only irrelevant (USF) or obstructions (TIIAP by Telcos).

Red showed the incredible deployment under winter conditions using commercial, no-license wireless devices hooked to a $3,000 a month satellite service, to bring to POP 80 Tooksook Bay, 56 Kbps Internet service to PC's in the school buildings, the health clinic, and the community building.

Even more impressive; in a region where the weather gets so severe (sometimes the wind chill is 75 degrees below zero and a "light snow" covers the only automobile in the village) that the students and teachers cannot go to school, but must study from home for days on end in three homes of teachers, administrators, and students. At 2 Mbps locally, with 100 percent reliability through last winter.

NONE of which is eligible for USF funding.

Not in Tooksook Bay, nor in any of the other 324 like villages, for which a technical, economic, solution is at hand. These villages have a subsistence economy with 5-7,000 dollars a year total incomes per family.

Then, after a senior FCC official made the keynote address in which, knowing he was addressing those who advocate, manufacture, install and use no-license advanced wireless systems, stressed the PROBLEM of the "tragedy of the commons" of the no-license arena (the theory that when too many radios operate in the same shared spectrum space, they all degrade to uselessness), young Tim Shepard made a brilliant presentation from his MIT Doctoral thesis on "dense spread spectrum networks." After, of course, that same senior official who had stressed the limitations of radio, was gone.

Tim's thesis is backed up by advanced mathematical analyses of how BILLIONS of radios can co-exist in the same electromagnetic space in a city, and exchange hundreds of megabits per second without a problem — totally wiping out the assumptions upon which the tragedy-of-the-commons-inspired FCC spectrum policies are based.

Fortunately, a not-quite-as senior FCC person was there, who, when invited, was only a technologist in the Policy branch, but is now going to replace the head of the FCC Office of Engineering. He understood the math, and the contention I have long held since reading Tim's doctorate that, if the radio manufacturing FCC policies are made right, there is no tragedy of the commons problem remaining.

The latest computer chip technology can support the types of networks Tim describes. Of course, Tim, (like David Eisenberg — who made his equally brilliant lunchtime presentation on "The Rise of the Stupid Networks," which wipes out the technological assumptions upon which the telephone company empires are build) says "Drop all regulations and let the technologist build the now-possible radios!" He even demonstrates that America could have 'free' telephone voice service everywhere! Just the cost of the radios.

Fat chance.

The obsolete telephone companies want to hold on to their threatened empires, and will pour billions into preventing Tim Shepard's radios from ever being made legal, even though the 270 million American consumers and the radio manufacturing industry would benefit.

And he was followed by another incredible presentation by Shigeaky Hakasui, of Harmonix corporation, who showed the theory and performance of new wireless devices that operate in the millimeter range, where only molecules of oxygen interfere at OC-3 or 155 Mbps, which costs MILLIONS to get from phone companies, wired! Very short range but capable of being daisy chained in downtown areas.

He showed deployment in Tokyo in driving rainstorms (that harm laser light networks, the only competitors). And the radio is the size of a book! In Tokyo, he had to slow down the throughput, because the end customers computers could not keep up with the OC-3 rate data flow! Sitting in the audience was Eric Lee, CEO of Solectek, whose latest spread spectrum radio you can buy right now for $9,000 does *only* 11 Mbps (above office LAN speed), for 25 miles!

Though there were other great presentations, clashes, and revelations, the high point for many was the Tour de Force presentation of the 7th graders in tiny Lewistown, Montana who, while being seen by the audience in the auditorium at George Washington University in DC, with the senior Senator

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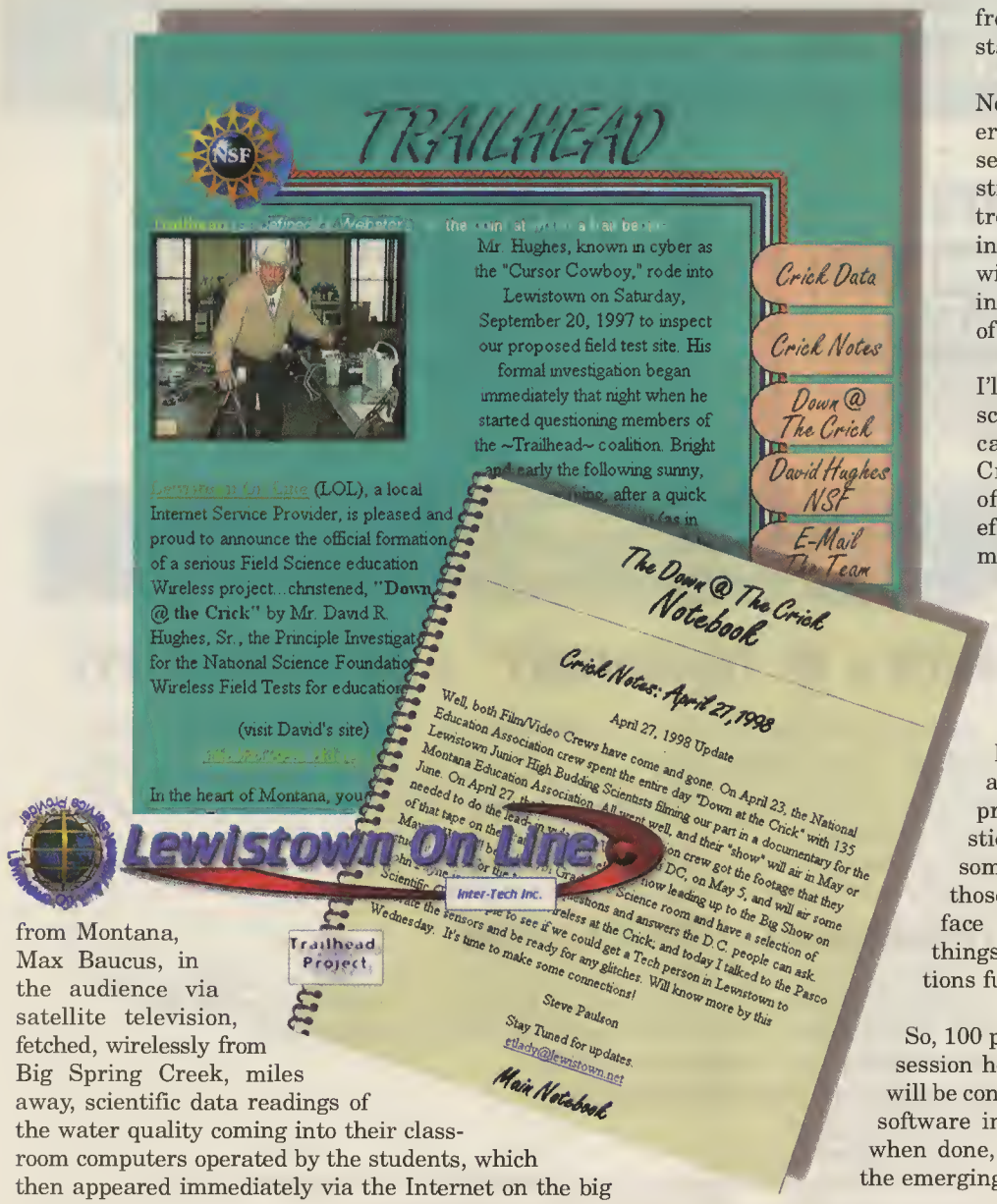

from Montana, Max Baucus, in the audience via satellite television, fetched, wirelessly from Big Spring Creek, miles away, scientific data readings of the water quality coming into their classroom computers operated by the students, which then appeared immediately via the Internet on the big auditorium screen in DC.

The reading taken during that class, for the demonstration of the potential of Field Science by wireless, is still on the Lewistown web site, and you can fetch it too.

Go to `www.lewistown.net`, then select "Trailhead Project." On the right column, find "Crick Data" and you will get the sensor readings last taken (later they will set up automatic recurring readings) wherever you are in the world.

All this was video taped by the television studios of GWU, and I have the tapes which, unedited, are already classic. The Senator schmoozed with the students after the incredible demonstration (which was produced at ridiculously low cost — the TV satellite real-time for the conference cost us $6,000, while the field science by wireless demo, which 100 million people can get, cost about $.50 of connect costs.), and then the audience got into a serious discussion with the thirty-plus seventh graders in Steve Paulson's classroom over the environmental meaning of the raw data just fetched — which they (the kids) really understood. And held their own with question from National Science Foundation staffers.

Next step? Submerge a tiny, video camera in Big Spring Creek so anyone can see the flow rate (too fast after the stream was diverted), and can look trout right in the eye to see if they are in distress. The data can be fetched wirelessly, even when the temperature in mid-Montana is 40 below and 3 feet of snow covers the stream and its ice.

I'll help them do that after I help a bat-scientist in Colorado count, at night, in cave openings high in the Sangre de Cristo mountain range, the number of bats flying out in a swarm, to see the effects of the Fish and Wildlife department trying to put grids on the cave opening to keep people out. All wirelessly connected of course.

Well, a lot of important things were cussed and discussed, seen and sampled, right under the noses of the high mucky mucks of Washington,DC, and the national media types — who prefer to cover the latest change of lipstick of Monica Lewinsky (we did have some key reporters there but of course those who will report on pies in Bill Gates face just are too preoccupied to cover things that will determine our communications future in SPITE of government).

So, 100 percent of every word spoken in the 20 session hours of the two days, was taped, and will be converted by Dragon Speaking Naturally software into ASCII text, all of which will be, when done, put on our wireless.oldcolo.com and the emerging wireless web site at GWU.

And Greg Jones, President of TAPR, who shared the technical panel podium and made a nice presentation on the radio TAPR is working on, has offered to convert the audio tapes into RealAudio and post them.

So, while you will never sample the intense, important-matters face to face meetings that went on for a few hundred people on May 4th and 5th in Washington, you will be able to read or hear everything they said, or applauded. (Well, almost everything. Many of those from 'government' want to review what they said and have the privilege of editing it before the whole world reads it.)

Dave Hughes of Old Colorado City Communications can be reached at `dave@oldcolo.com`. Further information is available at `wireless.oldcolo.com`. ◆

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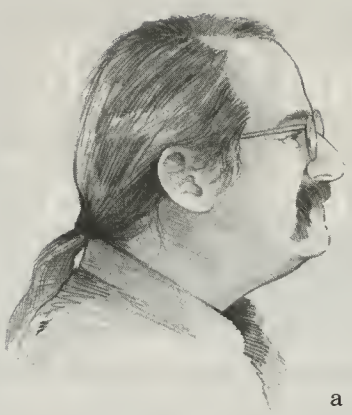

ISP MATING RITUALS by Bill McCarthy

SBC, AMERITECH AND BABY MAKES AT&T

SBC Communications Inc. and Ameritech Corporation agreed to a $62 billion, "industry-transforming" merger May 11 that will create a "new type of telecommunications company" with a "national-local" focus combined with national and international service capabilities.

Bill McCarthy, a recovering newspaper reporter, is an editor with ***Boardwatch Magazine***. He is surrounded by piles of press releases on a variety of Internet-related subjects. This column is one way to diminish one of those piles as well as an attempt to keep track of the mergers, acquisitions and some of the partnerships occurring among Internet service providers and their vendors. He can be reached at `bill.mccarthy@boardwatch.com`.

With 57 million phone lines, almost one-third of the nation's total, it would rival the new AT&T and WorldCom even if WorldCom is able to woo its Juliet, MCI. Bell Atlantic, the second largest local phone company, has 41 million lines. SBC cannot sell long-distance service, at least initially after the wedding. But the idea of three former Baby Bells rolled in one creates images of the AT&T that was broken up into regional phone companies in 1984. The company says it will have the assets, scope and strategies to compete against incumbent local telecommunications companies, competitive local exchange carriers, long distance companies and global competitors. Look out ISPs.

Could US West be subject to a surround and conquer? Of course, but with US West comes some costly taxes for its plan to split into two publicly traded companies - US West Communications and MediaOne Group.

If the merger is approved SBC will expand into 30 U.S. markets outside its traditional 13-state local region so that the combined company will have customers in the top 50 markets in the nation. Ameritech is strong in European communications markets and SBC is strong in Latin American markets. The merged company's combined international assets include operations in 19 countries in Europe, Asia, Africa, North America and South America.

"We will provide a competitive, integrated mix of local, long distance, Internet and high-speed data services providing more choices, new and improved services, more competitive prices and more convenience for millions of consumers, giving us the opportunity to create significant value for our shareowners," said Edward E. Whitacre Jr., chairman and chief executive officer of SBC, in a statement. Consumer groups and competitors, of course, are not pleased with the prospect, saying previous deals have raised rates and deteriorated service.

SBC is the product of Southwestern Bell and Pacific Telesis.

Ameritech shareholders will receive a fixed exchange ratio of 1.316 SBC shares for each share of Ameritech. Based upon closing prices as of May 8, after adjusting for the exchange ratio, the combined companies' value is $146 billion. The transaction will be a tax free, stock-for-stock exchange and will be accounted for as a pooling of interests. The combined company will be called SBC.

SBC promises to maintain Ameritech's headquarters in Chicago and its state headquarters in its traditional states of Illinois, Indiana, Michigan, Ohio and Wisconsin. It will continue to use the name Ameritech in its operating states; continue to support economic development and education in Ameritech's region; and continue Ameritech's levels of charitable contributions and community activities. Ameritech has about 70,000 employees and none are supposed to lose their jobs in the merger. It's hard to feel warm and fuzzy for an RBOC, but this one may qualify.

After the transaction is completed, Whitacre will remain as chairman and chief executive officer of SBC. Richard C. Notebaert, chairman and chief executive officer of Ameritech will remain as chairman and chief executive officer of Ameritech. San Antonio, Texas-based SBC's board of directors will be expanded to include Notebaert and four other current Ameritech directors. The merger is subject to shareholder and regulatory approvals. Since federal law prohibits ownership of overlapping wireless licenses, the companies will divest certain cellular properties. The companies expect closing within a year.

Under the merger agreement, Ameritech is not supposed to mess around with other suitors.

NETSCAPE, YAHOO! BREAKUP EXCITES EXCITE

Netscape Communications Corporation and Excite Inc. announced May 4 a strategic partnership to develop content and search services, and sell advertising jointly for Netscape's Web site, just as Yahoo! and Netscape decided they should see other people.

Excite will make an up-front payment of $70 million to Netscape (NASDAQ: NSCP) and issue warrants giving Netscape the right to buy up to 2 percent of the Web's second largest search engine, which these days is being called a Web portal. The Netscape-branded search engine and Excite (NASDAQ: XCIT) will share 50 percent of the overall search traffic at the Netscape site during the first year of the two-year deal. The rest of the site's search traffic will be split among additional unnamed partners. During the second year of the deal, the partners will swallow 75 percent of the search traffic at the site. Excite will retain its 25 percent share, and the Netscape-branded search engine will expand to 50 percent of all searches on the Netscape site.

The deal ends Netscape's traditional approach of sending traffic on an equal basis to a variety of partners, including Infoseek, Lycos and Yahoo!. Netscape has been searching for a search engine under its own brand name for some time.

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Excite will sell marketing rights associated with key search terms on the Netscape service, allowing Excite to offer advertisers high-profile placement on its own high-traffic sites and the Netscape search engine. Excite will provide programming for nearly half of the content channels on the Netcenter service. Last year, Netscape generated $108 million in Web site revenue, $95 million from advertising and $13 million from software sales.

A joint press release promises that this is "one of the largest partnerships ever established on the Internet," and says: "The deal serves as the catalyst for Netscape's major push into the Internet portal space." Where are these guys going? Beam them up, Scotty, they're stuck in some uncharted area of the galaxy.

On May 21, Netscape announced that its four "premier" search providers would no longer include Yahoo!. Partners and competitors can often be one and the same in the Internet business. Both are competing to become top "portal" sites. When Netscape Guide by Yahoo launched in April 1997, Yahoo was a search engine and Netscape provided browsers and other software. Now, Netscape's Netcenter is aiming to serve the same function as the Yahoo! guide. Yahoo! said its partnership with Netscape resulted in lower traffic than expected, and it did not want to continue paying to market the site.

Excite has another deal with America Online, and teamed up with AT&T in May as well. A series of purchases of technology companies for which Excite received criticism, seems to be paying off in the long run and making it attractive to other suitors. AT&T and Excite joined together on May 6 to launch the "Excite Online Powered by AT&T WorldNet Service." The three-year deal followed an announcement by AT&T that it would partner with search firm Lycos, also for a Web-based online service. In March, Yahoo! and MCI Communications launched a Web-based online service as well.

These search engine deals that include AT&T teaming with rivals for similar services in the same week have to make you wonder if large ISPs are looking at advertising revenues to supply the cash to make up for flat-rate access.

NORTEL, QWEST HOT ON AVICI'S TERABIT SWITCH

Nortel announced May 5 that Qwest Communications agreed to test the new terabit switch router (TSR). The product, announced the same day by Avici Systems, is designed to allow carriers to deploy IP services over their existing fiber networks in a cost-effective manner. On April 14, Nortel and Avici said they are collaborating to develop the first carrier-grade terabit IP network.

Avici said it has designed a switch/routing platform that is highly fault-tolerant and highly scaleable - from just a few hundred megabits to multiple terabits per second. By allowing native IP traffic to travel on existing fiber-optic, Frame Relay or ATM networks, the TSR offers carriers flexibility in protocols. The TSR can combine multiple trunks into a large virtual trunk of up to 160 gigabits per fiber, even if the original trunks are of different wavelengths or are traveling diverse routes. With scaleability from 2.5 to 160 gigabits per fiber, Nortel says its optical networks are already capable of supporting the TSR with maximum fiber capacity at minimum cost per bit.

Qwest is using Nortel's optical networking, tandem switching, and intelligent networking systems in its 16,285 mile network. In 1997, Qwest created the nation's first native IP coast-to-coast, 10 gigabit-per-second network using Nortel optical networking technology. If maximized for two terabit per second transmission over 24 fiber pairs, the network is capable of delivering the entire literary contents of the Library of Congress from coast-to-coast in 20 seconds, according to a press release.

GI, FRONTIER BRING THE ICE

General Instrument Corporation (NYSE: GIC) announced May 5 that it has partnered with Frontier GlobalCenter, the first global digital distribution company, to launch Internet Cable Express (ICE) for high-speed Internet connectivity through cable that requires minimal capital investment.

ICE provides operators with a complete hardware and services package for a flat monthly fee per subscriber. The ICE Internet cable product is compatible with all MSO systems and is capable of being self-installed by the end-user.

ICE offers operators total outsourcing of all Internet service development and operations by combining GI's cable technology and Frontier Global Center's national Internet services infrastructure. Operators only need to provide one rack in the head end for the equipment and a 6 MHz channel for downstream data delivery. They can be up and running in 90 days. They are also responsible for marketing the service.

General Instrument provides its Broadband Network Hub (BNH), which is placed at the operator's headend, and GI's SURFboard cable modems, which are installed at the end-users' computers. GI's SURFboard modems provide Internet access at connection speeds up to 50 times faster than a traditional 28.8 Kbps modem. GI will also offer MCNS DOCSIS-compliant two-way cable modems for operators with two-way cable networks.

GI's SURFboard telco-return cable modems support self-installable cable Internet service. An end user can install the hardware, establish a service account and access the Net without contacting the service provider. GI and Frontier Global Center are offering the SURFboard cable modems through lease, direct sales and retail programs.

APPLE BUYS MACROMEDIA TOOLS

Apple Computer announced May 4 that it bought technology from Macromedia for use in future versions of its QuickTime multimedia playback and authoring software.

The acquisition is part of Apple's efforts to support QuickTime's capabilities in digital video authoring, as well as playback over the Internet and on personal computers, the company said.

The computer maker declined to detail what technology it acquired or the terms of the deal, but an unspecified number of Macromedia engineers will join Apple in support of QuickTime. Apple just released the newest version of the playback and authoring software in March. QuickTime 3.0 is the first version to permit multimedia content creation on Windows computers.

QuickTime 3 mainly is used for viewing content. QuickTime 3 Pro, intended for use by content developers, has authoring features such as cutting and pasting of digital video and audio clips and readying content for Webcasting. Unlike QuickTime, it is not freeware. Recently, the International Organization for Standardization (ISO), a major standards-setting body, said it is looking at using QuickTime's file system as the basis for the MPEG-4 software technology. ◆

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MARKETING 101 for ISPs

by Michael Greenbaum

COLLATERAL THINKING

Is your trade dress in rags? Do customers get the idea you are too busy in the machine room to produce a decent brochure? Trade dress is the brand appearance associated with your products or services. One of the key areas that separates ISPs who know how to sell their service from those who only know how to deliver it is the quality of their collateral materials: the brochures, product descriptions, and other printed material they offer to prospects.

Most of the key principles of marketing come together in the development of collateral materials. How to get attention, create a positive brand image, and communicate well chosen messages about features and benefits in a way that is suited to your audiences is the very heart of creating effective collateral. If you treat it casually, and fail to do well at both strategy and execution, it will be all too obvious.

A note of caution: before getting into the specifics of creating collateral, you must have and apply an explicit strategy that ties in with your overall marketing and sales plan. If you do not have this plan, develop it now! Otherwise you will waste time and money on collateral that does not have the effect you need. (My next two columns will be devoted to the creation of a successful marketing plan.)

CREATING EFFECTIVE COLLATERAL MATERIALS

Key elements of your creative strategy are:

- Know your objectives.
- Define your audience/audiences.
- Quantify the results you seek.
- Assess the collateral that will give you the tools you need to meet the objectives.

Developing this strategy does not have to be a big, formal process, but it should be documented, based on the input of your key people, and shared with all who will execute it. Some of the major components include:

Positioning - Understand your competitive environment and how to best position your brand to exploit your strengths and target your competitor's weaknesses.

Sales cycle and process - Be clear about how you sell in your market. How do you reach your prospects? How do you interact with them? How do you close the sales?

Challenges and opportunities - Think through where you do well and where you do not, and how to bring your strengths to bear on your weaknesses.

Critique of existing materials - Get an objective reading on your current materials. Ask friends, colleagues or professionals.

Audience identities and characteristics - Communication is a process between two parties. If you do not know to whom you are trying to communicate, you probably will not do it very well. You need to know what kind of prospects you are targeting and who the decision-makers are. You probably have multiple audiences with different needs, whether aiming at companies with mangers and technical staff, or individuals who may rely on trusted technical advisors.

Objectives - What are your marketing objectives? Do you need to interest more prospects, or close sales with a higher percentage of the prospects you are getting? Do you want to move up- or down-market, or shift from one vertical market or region to another?

Image, tone and visual style - Define what it is you want to achieve, so it reinforces your message.

Production criteria - What is your budget, what quantities do you need, what production values are appropriate and affordable?

STRATEGY AND TACTICS

Work to know your audience as well as you can. Be precisely aware of the people to whom you are speaking. They are your "target audience(s)," and often you'll find yourself needing to speak to several audiences at once. Understanding who they are and what's really important to them is critical to creating effective collateral materials that speak to them. Empathy can be a powerful and engaging tool (but don't wax poetic).

Understand that there are no rules or formulas for designing an effective communications tool. Each company is unique, and the marketing piece that represents it should be also. On the other hand, each target audience is also unique. A piece targeted to a 23-year-old computer whiz should be much different than a piece targeted to a 45-year-old CEO.

Describe your products and services in terms of customer benefits, not in terms of technical features. Features won't matter to the customer unless they

Michael Greenbaum is a former vice president of sales and marketing at AppliedTheory, He also held senior management positions in the software, Internet, online services and hardware industries. At Borland International he was vice president of marketing responsible for all marketing and public relations functions including the annual user's conference. As a vice president at Bell Atlantic Internet, he was responsible for that company's strategy to develop an Internet presence and later to be an Internet service provider in its service area. Prior to that, he was general manager of Prodigy Services Co., the pioneering online service and was instrumental in applying the ease-of-use characteristics of the consumer to business applications. His business experience began in sales, marketing and business development with IBM.

PAYDAY!

Westcon's Buy Back Program makes the Bay Networks deal go through!

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When it comes to inking a deal, take a tip from Madison Technology Group, a division of MicroLan Systems, Inc. They used Westcon's Buy Back Program to close a half-million dollar sale with one of the country's largest book retailers. Westcon bought back nearly 300 hubs and modules, and replaced them with 550 Bay Networks switches and 275 switch modules.

Big savings on Bay Networks upgrade purchases!

According to Ira Silverman, President of Madison Technology Group, *"I needed ta structure an upgrade within a certain budget. My Westcan accaunt manager warked with me to make the Buy Back deal that closed the sale — and saved my custamer 28 percent."*

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Contact Richard Gaglio, Westcon's Buy Back Manager, at **800-511-7234**
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understand just how they will benefit from them, and why they should buy them from you. Build a case for value. (This is extremely important for a company like an ISP that offers what the market considers to be a commodity.)

Be clear and focused in all of your communications. Limit them to three or four key messages. Avoid the temptation to "include everything." Leave out everything that does not build your brand, differentiate you from the competition, and communicate benefits. Saying too much all at once can actually confuse your audience.

Control the depth and breadth of content of each tool based on type. A high-level piece, like a capabilities brochure, will speak much differently than will a product or service data sheet. Where budget allows, create separate tools that speak to each target audience in the sales cycle. Avoid sending lengthy technical descriptions to the CEO or marketing director, or information that is weak in the details to a technical leader.

An effective communications tool is much more than a dry translation of a good strategy. In order to be effective, and this is the hard part, it must compel, engage, and leave a memorable impression on the audience. Achieving this result, while avoiding tired clichés, is the magic that separates the average from the standout exception. (This might be a good time to consider some expert outside help.)

Hire a design firm that can help you achieve your marketing and sales goals. The goal of the design firm is to get the piece opened, not to create a work of art. If the layout is not engaging and open, no amount of fine art or great copy will matter. Invite two or three reputable firms (identified through referral or research) to present their capabilities to you. Ask them how their work addresses business issues, what their working process is. Look at examples of their work, and look for "good chemistry." A trusting, collaborative relationship will be critical to the success of your project.

Remember ...

If you are going to do collateral on your own, they must be based on a firm strategic foundation, knowledge of your audience and clear and focused communications of the customer benefits. If you cannot create collateral, help is available.

USEFUL RESOURCES FOR MORE INFORMATION

The Corporate Design Foundation, an organization focused on the value of smart, strategic design to the business world has some high-quality content. Their journal is aimed at managers, and is online. Unfortunately it is not searchable and the archive is limited. `www.cdf.org`.

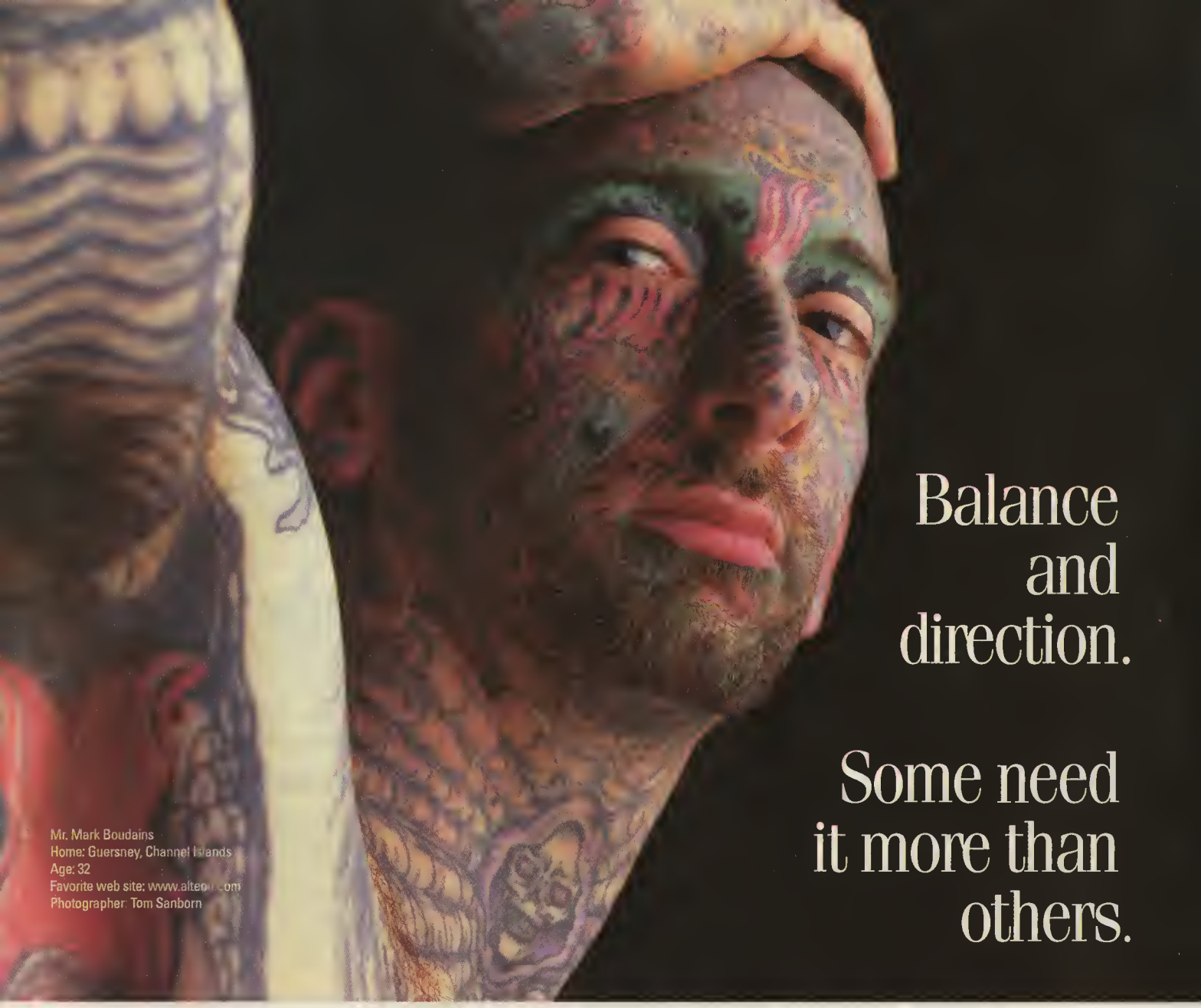
Guerrilla Marketing Online is for small business, entrepreneurs, sales people & marketers of all kinds, related to an excellent series of books and seminars. The *Weekly Guerrilla* is an extensive collection of useful and readable articles, including one on "The Art of Brochures." `www.gmarketing.com/tactics/weekly.html`.

The CIO WebSheet offers a Guide on Marketing to Information Executives. Whether your goal is brand/corporate recognition, leads or greater product awareness, CIO's online newsletter for marketers offers sound advice from leading experts in the field of advertising and promotion. `www.cio.com/marketing/`.

GENERAL INFORMATION

PRSA's Technology Section (Public Relations Society of America) site provides Internet tools and resources to help section members and other communications practitioners do their jobs. An extensive resource directory is included. `www.tech.prsa.org/`.

SmallbizNet includes an extensive library Fulltext keyword searching on nearly 4,000 indexed and abstracted documents and book chapters especially chosen to help you start and run your business. Leading small business book publishers, government agencies, universities, Internet publishers, and not-for-profits contribute to this database. Extensive sections on marketing. `www.lowe.org/smbiznet/index.htm`. ◆



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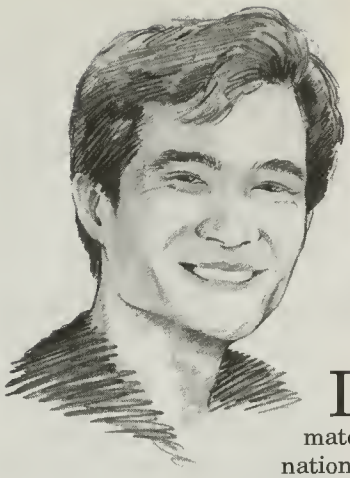

BIG BOARD BRIEFS by Wallace Wang

AMERICA ONLINE TESTING DIGITAL SUBSCRIBER LINE TECHNOLOGY

In an attempt to increase the number of customers they can service (and ultimately ignore), America Online has begun nationwide trials of Digital Subscriber Line (xDSL) technology, which allows high-speed transmission of data over standard copper phone lines.

AOL is working with GTE Internetworking to set up the xDSL trials. Initial trials will take place in Birmingham, Alabama; Redmond, Washington; Phoenix, Arizona; San Francisco, California; and the suburbs of Washington, D.C. and Virginia. The service will cost $49.95 per month, which includes the AOL subscriber fee.

If these trials prove successful, America Online plans to roll out similar xDSL service to other parts of the country while testing cable and wireless technology as well. With so many different ways to connect, America Online just has to worry about keeping their subscribers from defecting to rival Internet services.

PRODIGY 56 Kbps MODEMS STILL FLAKY

Think that since the latest 56 Kbps modems have finally settled on a standard that your modem standardization problems are over? Think again. Prodigy subscribers using 56 Kbps modems have found that the new V.90 modems still only connect at 28.8.

3Com confirmed a bug in early versions of the x2 firmware that prevents 3Com V.90 modems from properly negotiating a 56 Kbps connection with 3Com's Total Control remote-access equipment. Other online service members have not experienced similar problems so if you're a Prodigy user who hasn't upgraded to a 56 Kbps modem yet, keep your old modem. Or better yet, just switch to a different Internet provider and avoid Prodigy's current 56 Kbps woes altogether.

AMERICA ONLINE NOT LIABLE IN CLINTON AIDES' SUIT

A federal judge has dismissed America Online as a defendant in a White House adviser's $30 million defamation suit, saying that Internet service providers are not accountable for content supplied to them by third parties. U.S. District Judge Paul L. Friedman ruled that Congress exempted AOL and other interactive computer services from such lawsuits when it passed the Decency Act of 1996.

The problem occurred when White House adviser Sidney Blumenthal and his wife, Jacqueline, who runs the White House Fellows program, sued AOL and AOL's online gossip columnist Matt Drudge (Keyword: Drudge) over a report that said Blumenthal had a "spousal abuse past."

Drudge, whose Drudge report appears on his own Internet site, which can be reached through any Internet provider, retracted the item the next day and apologized. But the Blumenthals accused him and AOL, which pays Drudge $3,000 a month, of recklessness and sued them for $30 million.

Although AOL has been found innocent this time, expect to see more lawsuits from people trying to sue an Internet provider for information that they couldn't possibly validate or check on their own. Then again, lawsuits never revolve around justice so much as they do around money.

COMPUSERVE STUMBLES AGAIN

Despite its new ownership with America Online, CompuServe continues demonstrating to the world why they're no longer a major player in the online service market. Not only are they wasting time developing a proprietary user interface (dubbed CompuServe 4.0), but they're also trying to merge their CompuServe content to the Internet at the same time.

To migrate their content to the Internet, CompuServe started offering a service called "C from CompuServe," which allowed access to several CompuServe forums from any Internet browser. But as of midnight on March 31, CompuServe decided to discontinue their "C from CompuServe" service, which debuted in January, just three months earlier.

CompuServe claims they plan to merge "C From CompuServe's" mix of Web-enabled products, news, communities, and forums into their new CompuServe 4.0 software, which should be available this summer. If CompuServe plans to merge their proprietary content to the Web, then why bother continuing to develop their CompuServe 4.0 interface software?

Looks like CompuServe is changing directions so often they're going nowhere instead. Check out CompuServe's Web site (`www.compuserve.com`) and you'll see that CompuServe hasn't bothered to provide any press releases at any time during 1998. Anyone want to place bets that CompuServe's executives will receive fat bonuses while the entire service drains away completely?

Wallace Wang is the author of ***CompuServe For Dummies, Visual Basic For Dummies, More Visual Basic For Dummies, Microsoft Office 97 For Dummies,*** *and* ***More Microsoft Office 97 For Dummies.***

When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at `70334.3672@compuserve.com`, `bothekat@aol.com`, `bo_the_cat@msn.com`, or `bothecat@prodigy.net`

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AMERICA ONLINE JOINS FORCES WITH FAMILYEDUCATION

America Online has entered into a partnership with FamilyEducation to jointly develop interactive educational services. Under a four year agreement, FamilyEducation will become an anchor tenant in AOL's Research & Learn (Keyword: Research & Learn) and Families (Keyword: Families) channels.

In return for giving FamilyEducation a prime location on its service, AOL will receive approximately $14 million and an estimated 20 percent stake in the Boston-based FamilyEducation. If America Online makes enough agreements with enough companies, they might be able to afford to lose money providing Internet service just as long as they can continue attracting lucrative business agreements that earn them profits that servicing individual members can never do.

DELPHI OFFERS FREE MEMBERSHIPS

As another way to compete against the other online services, Delphi is now offering free membership registration (provided you already have an Internet account). Just visit Delphi (`www.delphi.com`) and sign up.

Once you become a member, you can participate in Delphi's live chats and message board discussions as well as create and manage your own personal home page. So, if you want to join a small, but vibrant community that may not be as volatile as Internet newsgroups or IRS chat rooms, give Delphi another look today.

12 MILLION PEOPLE CHOOSE AOL

With the online market all but decimated, America Online continues attracting new members while their former rivals (CompuServe, Genie, Delphi, and Prodigy) quietly fade further into the background of oblivion. Recently America Online reported that it managed to service 675,000 users simultaneously without crashing the system, losing their e-mail, knocking them offline, or interrupting them with a busy signal, which was the previous hallmark of AOL service.

Now total membership in AOL has surpassed 12 million members. AOL's membership has grown by approximately five million since it introduced flat rate pricing in December 1996. The bulk of AOL subscribers continue to be people who are going online for the first time. Interestingly, 52 percent of AOL's users are women, compared to 16 percent just four years ago.

The average AOL member uses the service an average of over 46 minutes online a day while AOL's computers handle over 28 million e-mail messages every day while sending 225 million Instant Messages as well.

With AOL the only online service worth considering any more, it looks like America Online is finally solving the most nagging technical problems that have plagued the service in the past. Then again, it's only a matter of time before AOL does something to wreck their image once again. ◆

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STREAMING MEDIA by Doug Mohney

CHA-CHA-CHANGES

Doug Mohney was employee #10 at DIGEX. He has learned, and forgotten, a lot about help desk support, competitive intelligence, sales and marketing, leased-line service ordering, telco service, and public relations. He makes no pretenses at understanding anything more about the technical side of IP other than being able to get a PPP account working.

His writings have been published in *LA View*, *Washington Technology* and the *Washington Post*. Doug receives e-mail at `moo@clark.net`.

G2 - EVEREST NEXT?

Don't blink! RealNetworks (`www.real.com`) has a totally new release of the RealSystem software out. Named G2, as in generation 2 (Were they thinking mountains?), the release packs in an improved audio codec for 28.8K modem connections, "SmartStream" technology that automatically and dynamically scales to match available bandwidth, two new datatypes (RealText and RealPix), full support for SMIL and RTSP, an Auto-Update feature to download new versions of the software automatically, a lot of fine-tuning tweaks and a bunch of software knobs to fine-tune audio and video.

One heap big mouthful of improvements, eh?

The implementation of "SmartStream" hearkens to VDONet's technology for adjusting quality based upon bandwidth. At first glance, it seems like a backwards step to be able to adjust between 14.4K through 56K, but if you are surfing and listening at the same time on a dial-up connection the light bulb suddenly goes on.

RealText and RealPix are pretty clever additions too. Need to develop a PointCast-like presentation? Use RealText for the headlines and stock ticker updates, then slide in RealPix for the sliding-image commercials with your own JPEGs. I wouldn't be surprised to see a translation tool to convert spiffy Microsoft PowerPoint presentations into RealSystem deliverable form. Having dealt with trying to upload large PowerPoint files, only to discover that PowerPoint 97 PowerPoint 95 format, you can send me a copy ASAP.

It's real hard for me to get jazzed for SMIL support. Sure, it's a standardized layout language and a proposed W3C, XML-based standard for multimedia layout and presentation, yah yah. However, until support is actually integrated into future versions of Netscape and IE, who cares? It's a nice feature that will probably be more valuable in the future, but I have to wonder if, in the quest to be compatible with everything, RealSystem G3 or G5 will be as code-bloated as Windows '98. Note to Real: If you throw a multimedia version of Solitaire in a future release, I'm going to short your stock. Heavily.

I also have to admit to some queasiness on the AutoUpdate feature. What if a code revision is automatically downloaded that doesn't work with your system? Fortunately, you have the ability to manage when and how RealPlayer G2 components or codecs come down to your machine, but it's one of those hot-button concepts that you have to either love for the convenience sake or loath because you don't have full control over what is what.

PR points to someone at Real e-mailing me to get a postal address for propaganda purposes. Most press flacks spam first before even bothering to do their homework. So when can I get to interview Rob Glasier?

GODZILLA VS. MOTHRA

If RealNetworks really wanted to rape, plunder, and pillage while Microsoft is under attack by the Department of Justice, various state lawsuits, ala tobacco industry, and Sun (I'm writing this in May and by the time you read this in July, I am willing to bet Microsoft and the other parties will still be in court), they'd pull the trigger on a fire sale for server software. Get cutthroat and sell as many licenses as possible to put a stake through the heart of NetShow. Real doesn't have to give away its software, but a large price drop could do wonders for creating an insurmountable lead in the streaming media field.

Microsoft is going to be the target of everyone's darts for a while and Real is the player to beat. Actually, if you dump Microsoft out of the picture, Real is the ONLY player, with a wild card to the MPEG 3 (`www.mpeg3.com`) crowd. MPEG started out as a set of video standards, but someone over in Germany tore out audio support and separated it from the rest of the standards, hacked up some basic code in C for portability, and released it to the world.

A cult following has erupted around MPEG3 since the actual recorded audio is pretty damn close to CD quality—good enough to upset traditional recording interest concerns in hunting down MPEG3 audio sites when the MPEG3.COM people make noises

about the "Free Music Philosophy (FMP?) and allowing any individual to copy, distribute, and modify music for personal, noncommercial purposes.

To the ASCAP and BMI music rights associations, FMP is as palatable as Communism was in 1950's America.

Adding high-tech cooking to the spicy manifesto, MPEG3 hackers have allegedly developed a server-like program to "stream" MPEG3 files to multiple listeners akin to multi-user RealAudio streaming. If you want a flavor of underground and outlaw, go look into MPEG3. The record companies may not approve, but I'm sure the Grateful Dead would.

And so it begins...

Fox News and NBC have both jumped onto the Internet video bandwagon. The Fox News Online site (www.foxnews.com) allows the on-line viewer to create a customized newscast. You click on check boxes to select the stories you want to view from the categories of news, business, sports, health, sci-tech, and weather. Don't want to see the health spot? Just don't click it. Want all sports stories? Just click on those. It's all delivered in RealVideo format, your choice of 28.8 or 56K per second.

The Fox custom clip concept reminds me of a presentation given by Richard Hart at the San Francisco ISPCON '97 speaker's reception. Richard had built a concept mock-up similar to the Fox News Online site, except with more functionality. Hart's version (no doubt to be implemented by Fox or someone else next year) used drag-and-drop functionality so you could set up your customized news program to play the sports summaries first, followed by weather or news in whatever order you wanted. I was much more impressed with the in-depth Richard Hart than the C|Net two-minute sound bite version of Richard, by the way.

NBC's Videoseeker (www.videoseeker.com) is the network's way to start and work with streaming media and video-on demand concepts for the future. Content choices include outtakes from NBC's line up, backstage peeks at NBC shows, and "Access Hollywood" clips. You can't get a whole show, but you can get the opening sequence or a short piece in your choice of QuickTime, NetShow, (What else from a MSNBC partner?), and RealVideo. Miss Jay Leno's dialog? You might find it here, but the site only appears to carry four to five short video clips per show, so my hope of going back to see the first episode of

Homicide: Life on the Street is pretty much shot. I suppose we can put VideoSeeker in the experimental category, but why are folks going to come visit it if there's not going to be a lot of meat on it?

CONVERGENCE CONFUSION

A lot of the Big Network television movement onto the Internet has been due to the fact that more people are spending less time watching TV and more time on the Internet. A truly cynical person might rejoice in this trend and try to link it to the fact of increased worker productivity over the past few years.

Most certainly more traditional broadcasters are coming to grips with the fact that normal television broadcasting is being legislated out of existence in a headlong rush to convert from analog NTSC to digital TV. Sometime in the far future (seven years and counting), TV broadcast stations in the US are supposed to give up their analog transmitters and frequencies and switch to new improved digital TV transmitters, thereby rendering your analog TV useless unless you buy a $200 converter box to decode digital signals into NTSC. Alternatively, you can buy a new digital TV seven years from now, but you better hope the prices go down because the example models out today have beautiful picture and $10,000-15,000 price tags.

Confused yet? OK, now add in that broadcasters are thinking about tucking in data broadcasting within their digital signals, so you could either watch *The Love Boat: Next Generation* or get your local desktop refreshed with a group of 20-30 Web sites. Of course this is totally different from the capability being bundled into Windows '98 as a feature called "WaveTop" to receive data broadcast information on the vertical blanking interval of NTSC television signals in major markets with the appropriate television tuner. Lower data rates on this scheme, say 128K/second, which isn't bad for slopping around Web pages, but larger data objects and streaming video quickly disappear. Add on the other bugaboo: If you aren't in reception range of about 28 PBS stations around the country, you're out of luck.

You may be confused now.

What does it all mean? You'll hear about more companies start to use the phrase "datacasting," the capability to broadcast data through the airwaves like the way you can tune into analog radio or TV now. Typically, datacasting uses RF-based technologies, either TV signals or satellite broadcast, such as some of the services Hughes is offering through DirectPC. It's all typically one-way data, all "bulk" data that can't fit over a conventional phone line for the end user. Digital TV will offer more opportunities for traditional broadcasters to get into the data broadcasting business and to move bulk items.

Datacasting doesn't have to be IP multicast—the information I sent out without ANY auditing back trail, confirmation of arrival, or the like. The Windows '98 WinTop scheme sucks in data off the airwaves, then records what you click on and sends back that information (shades of *1984* and Orwell) when you establish a dial-up connection. No IP multicast overhead required.

Higher-speed datacasting services may offer streaming media content creators and distributors the ability to deliver many many "channels" of audio and video. It's going to have to be

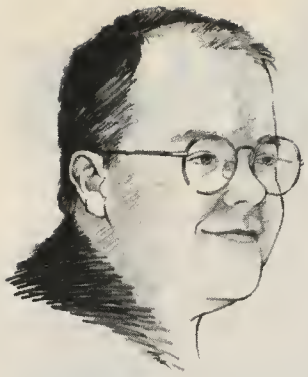
higher speed than the VBI/WaveTop scheme because one "channel" of high-quality audio can consume 56K/second without breaking a sweat. However, will traditional broadcasters allow self-styled "Next Generation Broadcasters" access to the data broadcast channel? Old-line broadcasters may not want to find out that the low-quality Internet video production gets better audience numbers than the more expensive HDTV-produced network show.

Once we shift into the world of digital TV some day, will we need to ask PBS to act as the national public data broadcast channel? How will you get access to the public data broadcast channel? Do we need a local public data broadcast channel? (Probably not; we've got enough problems with spam e-mail and Usenet news as it is!)

LOOKING FORWARD

Given the lead times involved in going to print, I've had to map out stories for the next few months. August (Deadline: Early June): Probably discuss end-line content providers and do a couple of stories following up on my discussions at ISPCON. September: (Deadline: Early July) Looking forward and looking back—One year of streaming media: A time of review. October: (Deadline: Early July) Moo's Blue Ribbons for the year.

I'll try to put the more interesting time-urgent items on my web site, **www.interestingtimes.com**, but I can't promise near-real time updates. Between the day job and the travel, I'm averaging a two to three week lag time. ◆



EURO NEWS

Richard Baguley

UK GOVERNMENT UNVEILS ENCRYPTION LAWS

In a surprise move, the UK Government has unveiled plans for new laws that would create legal bodies with responsibility for backing digital signatures. These proposed laws would be accompanied by laws that would allow government and law enforcement bodies to gain access to these keys. The details were revealed in an answer by Barbara Roche, an undersecretary at the Department of Trade & Industry to a parliamentary question. Roche said in her answer: "I am announcing today proposals for legislation to introduce voluntary licensing arrangements for bodies offering cryptographic services to the public to ensure that minimum standards of quality and service are met... The legislation will also enable users to place greater reliance on digital signatures, through a presumption of legal recognition for those signatures generated by licensed Certification Authorities." Alongside this will be laws allowing the police to gain access to these keys: "It is not, however, in the interests of business or the public for criminals and terrorists to be able to exploit these new technologies to disguise or conceal their activities. To meet these concerns, the Government will also introduce legislation making provision for law enforcement agencies to gain legal access... to encryption keys or other information protecting the secrecy of stored or transmitted information."

Richard Baguley is the technical editor of ***Internet Magazine*** in the UK. His writing has appeared in numerous places, such as ***Mac Format***, ***Wired News*** and ***WebMaster***. He is an ex-editor of ***Amiga Shopper*** (which one ex-contributor described as being "enthusiastically dull") and ***Internet Today***. He lives in North London and drinks beer (with an occasional cup of tea on the side). He can be contacted at `baggers@baggers.com`.

This Parliamentary reply was accompanied by a statement, the wording of which can be read at `www.cl.cam.ac.uk/ftp/users/rja14/dti2`. What it basically proposes is a number of government approved Trusted Third Parties (TTPs) would be licensed to provide cryptography services, although this would not be obligatory - companies would still be allowed to offer cryptographic services without obtaining a license. The Government is hoping that the promise of legal recognition of the digital signatures produced by licensed TTPs will persuade companies to become licensed.

This is accompanied by proposed laws that allow law enforcement agencies to obtain a warrant to get hold of the encryption keys from the TTPs in much the same way that warrants are obtained for taps on telephone lines. These laws will not only cover licensed TTPs - all companies offering encryption services will be forced to hand over their encryption keys on production of a valid warrant.

In fact, some experts have suggested that it may be even easier for the Government to get hold of these keys than it is to get a telephone tap, and that the proposed law includes little or no option for the granting of warrants to be overseen by any independent authority. The proposed law will even cover users of cryptographic products, so if you are using a product like PGP and the police get a warrant, you will be legally obliged to hand over the decryption keys.

Not surprisingly, the proposed laws have come in for some criticism. Encryption expert Professor Ross Anderson of Cambridge University declared that finding the holes in the Government's justification "should be an easy exercise for the dimmest of undergraduates" - you can read his detailed analysis of the proposals at `www.cl.cam.ac.uk/users/rja14/`. The Global Internet Liberty Campaign (at `www.gilc.org`) claimed that "Such a plan will compromise privacy; will not enhance detection of crime; will increase opportunities for crime; and will hinder or halt the development of online commerce....mandatory key recovery policies would make Britain a second-class nation in the Information Age."

Encryption expert Phil Zimmerman has gone one step further - he's already announced that he will be adding a new option to PGP version 6, which is due out shortly. This new option will allow you to change your secret key (which is used to decrypt data) without having to change your signature key (which can be attached to e-mails to allow people to send you encrypted e-mail). In other words, you could supply your private key to the TTP (or the police if they have a warrant) and then immediately change it without people having to know about it, leaving the police with a key that can't be used to decrypt your e-mail. If they want the new key, they would have to get a new warrant, and you could then change the key again, and so on. Meanwhile, people could continue to send you encrypted e-mail without having to change anything...

Of course, this proposal is only the first step. At present, it's simply a rough suggestion for a law - it would have to be put into the proper legal language before it can proceed. If the Government decides to progress with this action, they will have to write the bill and try and get it through the process of putting

it onto the statue book, which involves debates in both the House of Commons and the House of Lords. This process takes a long time and has plenty of opportunities for debate and scrutiny. Even with a sizeable majority, it seems likely that the Government would encounter some opposition along the way, which could stop the law progressing.

All this seems to be rather at odds with the Labour Party's manifesto commitment to a free and open internet - to quote from their Manifesto (which you can read at `www.labour.org.uk/views/info%252Dhighway/content.html`, and no, that isn't a typing mistake- that's the right URL) - "Attempts to control the use of encryption technology are wrong in principle, unworkable in practice, and damaging to the long-term economic value of the information networks." Is this another case of the promises of politicians being cast aside when they get into power? We shall see...

THE PRICE OF A DEMON - £66.6 MILLION

Way back in 1997, I featured a story in this column about how Demon Internet was looking for a buyer. Demon Internet (at `www.demon.net`) were very much the pioneers of commercial Internet access in the UK, and pretty much set the standard for the way that access is charged for with their "tenner a month" policy. In fact, the company grew out of a discussion on CiX (a UK based online service, not connected with the similarly named US Internet exchange). More recently, the company had been looking for someone to invest a significant amount of capital to help it complete in an increasingly crowded market and expand into new markets.

Now, the company has announced a deal with Scottish Telecom, a (not surprisingly) Scottish Telecoms company. The deal is worth just over 66 million pounds, but according to rumours, Scottish Telecom didn't make the highest offer - British Telecom were thought to have offered more, but the Scottish Telecom offer of 666 million pounds was the one accepted by Cliff Stanford, who founded the company and held the majority of the shares.

He is thought to have made around 33 million pounds out of the deal, which includes the appointment of a new Managing Director. His decision was probably also influenced by the fact that BT would have probably just folded the company into their own consumer Internet service (BT Internet), while Scottish Telecom are more likely to keep it going as a separate entity.

IS SIZE IMPORTANT?

Rod Matthews, chief executive of Scottish Telecom and new chairman of Demon commented that "This acquisition establishes us as a leading provider of both Internet access in the UK both in the business and regional markets... The UK Internet access market, both for business and residential subscribers, is consolidating in favor of large suppliers with a significant subscriber base which have access to capital and additional value-added services. Our expertise in telecoms, online information and call center services places us in a uniquely strong position to exploit the considerable potential of this acquisition." In other words, big is very beautiful, and Scottish Telecom see Demon getting bigger...

Interestingly, Scottish Telecom already owns two ISPs - Scotland On Line and Prestel On Line. Although both of these companies have been performing pretty well, it's not clear what will happen to them - it seems unlikely that Scottish Telecom will want to keep three competing companies going, so one or both will probably be folded into Demon...

UK SPAMMER TO GET AWAY WITH IT?

According to recent press reports, what could have been a landmark case against a UK spammer has been dropped. The case centered around millions of messages which were sent out through a small English ISP, with a faked return address pointing to a Scottish ISP. Both companies had collected a significant amount of information on the person alleged to have sent the message, and has passed this to police forces. They claim that the spam message included enough information to identify the spammer, including his address and telephone number. Both companies claim to have suffered significant downtime as a result of the spam, leading to claimed losses of around a hundred thousand pounds.

However, the recent press reports claim that the police have decided to not bother pressing charges against the spammer, allegedly claiming that there was a lack of substance to the allegations. The ISPs are now considering taking legal action themselves against the spammer. Ironically enough, the spam messages that were sent were offering spamming software and a database of 57 million e-mail messages for sale...

NOVELL UK SCORES OWN GOAL ON SPAM

Speaking of spam, a recent report issued by the UK branch of network software company claimed that spam is costing UK and Irish companies over five billion pounds a year in system downtime and the amount of time that users spend filtering their mail. This report (entitled "A Spammer in the Works") claimed that 75 percent of the people surveyed received up to five spam messages a day, with a worrying 15 percent of those surveyed claiming that they spent up to an hour filtering and deleting this spam.

Unfortunately, a few days after the report was issued, anti-spam activists at CAUCE (the Consortium Against Unsolicited Commercial E-mail at `www.cauce.org`) discovered that Novell's own mail servers were not spam proof. In fact, the way they had been set up meant that the could be used as spam relays, where the mail servers are used by spammers to send messages without having to reveal their real identities. Ironically enough, Novell had claimed that their own mail server programs could be used to stop spam, but they hadn't actually taken the relatively simple step of setting up their own systems to reject spam messages... ◆

POLICY FORUM

Rudolph Geist

FCC REGULATION OF THE INTERNET-IS IT HERE?

The Federal Communications Commission has recently opened the door to regulation of the Internet. In a Report to Congress, which *Boardwatch* reported on in last month's issue, the FCC concluded that at least two distinct areas of Internet-related services may not fall under the FCC's enhanced service provider ("ESP") exemption from FCC regulation.

Rudolph J. Geist is a telecommunications attorney with the Washington, DC firm of Wilkes, Artis, Hedrick & Lane specializing in and helping to develop the area of Internet law. Mr. Geist represents ISPs in numerous matters before the FCC and state regulating bodies, including relations with other telecommunications providers, carrier certification, consultation regarding federal grant programs, federal, state and local taxation issues, First Amendment issues, domain name and IP address allocation issues, and mergers and acquisitions.

He also serves as counsel to the United States Internet Providers Association (USIPA), a national trade association established to facilitate fair government and telecommunications industry policies for ISPs. Mr. Geist can be contacted via e-mail at `rgeist@wahlone.com`, telephone at (202) 457-7345, or through USIPA's World Wide Web site at `www.usipa.org`.

Specifically, the FCC suggested that neither "phone-to-phone" IP telephony providers nor facilities-based Internet providers that have constructed their own transmission facilities (e.g., fiber, copper loop, switching) to provide for their internal needs or sell capacity to other ISPs should receive the ESP exemption.

While the Report is not a binding FCC decision and is only discussion of current and proposed policy, the FCC's suggestions therein represent a substantial change in the traditional regulatory model and climate for ISPs, whose services have historically been unregulated, and appears to establish a new policy of regulating any Internet services that remotely resemble regulated telecommunications services. The FCC has stated that it will soon more closely review these policies in a rulemaking context.

The FCC's policy decisions stem from its recent Report to Congress on the implementation of the federal Universal Service Fund program. Initially pushed by Senator Ted Stevens, Congress required that the Commission file the Report mainly to explain why "information service" providers, such as ISPs, are exempt from making contributions into the Universal Service Fund, unlike "telecommunications" providers who must pay into the Fund.

Senator Stevens was specifically concerned that ISPs may participate in the FCC's Schools and Libraries Universal Service Fund program, but do not have to contribute into the Fund.

The FCC's conclusion that "phone-to-phone" IP telephony providers and facilities-based Internet providers that use their capacity to serve their internal needs or sell capacity to other providers should be regulated telecommunications carriers results from the FCC's interpretation of several key statutory and FCC definitions.

TELECOMMUNICATIONS vs. INFORMATION SERVICES

In the Telecommunications Act of 1996, Congress defined "telecommunications" as:

". . .the transmission, between or among points, specified by the user, of information of the user's choosing, without change in the form or content of the information as sent or received."

"Information service" was defined as: ". . .the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing or making available information via telecommunications . . ."

Telecommunications have traditionally been considered as those transmission services offered by telecommunications carriers over which they have no control of the content such as local and long distance voice telephone and facsimile transmission services, paging services, cellular services, and satellite services. Information services have traditionally been considered those services offered by enhanced service providers such as voice mail, online services, caller ID, and lately Internet access and e-mail services.

BASIC SERVICES vs. ENHANCED SERVICES

The definitions from the Telecommunications Act closely parallel the FCC's definitions of "basic service" versus "enhanced service" as initially defined in the Computer II decision, 77 FCC 2d 358 (1980). In Computer II, the FCC stated that "basic service" includes the provision of: "pure transmission capability over a communications path that is virtually transparent in terms of its interaction with customer supplied information.

The FCC defined "enhanced service" to include: "services, offered over common carrier transmission facilities used in interstate communications, which employ computer processing applications that act on the format, content, code, protocol or similar aspects of the subscriber's transmitted information; provide the subscriber additional, different, or restructured information; or involve subscriber interaction with stored information."

Whether a service is regulated depends on which of the above definitions it falls under. Information services and enhanced services are currently unregulated. Telecommunications services or basic services are regulated, resulting in the regulation of the carrier who provides them. In its latest Report, the FCC has re-evaluated the definitions and reaffirmed that Congress intended "telecommunications" and "information services" to be mutually exclusive with respect to regulation (i.e., only telecommunications services should be regulated).

The FCC determined that information service providers should not be regulated as common carriers simply because they provide services via telecommunications (i.e., simply because they provide information services using regulated telephone lines purchased from telecommunications carriers). Thus, the FCC concluded that Internet access, electronic mail, Usenet news groups, etc., are information or enhanced services, and thus, not subject to common carrier regulation.

Although the FCC appears to have affirmed its general "hands-off" policy with respect to Internet services, the Report nonetheless raises some significant issues of concern.

COMPUTERS vs. TELEPHONES

First, the FCC suggests a new policy with respect to the regulatory treatment of some forms of IP telephony, distinguishing between two forms of IP telephony, "computer-to-computer" and "phone-to-phone." Computer-to-computer IP telephony (where an end user connected to an ISP uses IP telephony software on his computer to connect with another ISP end-user customer using IP telephony software) is considered by the FCC to be an information service which should remain unregulated. The FCC reasons that computer-to-computer IP telephony is not telecommunications because it is the same as Internet access—pure IP packet transmission which is altered in format or content by the end-user with a computer.

However, phone-to-phone IP telephony is distinguished from computer-to-computer IP telephony, and the FCC suggests that it should be considered a regulated telecommunications service. The FCC claims that where the ISP is simply holding itself out to offer voice or facsimile services over regular touch-tone or facsimile customer premises equipment (CPE) connected to the public switched telephone network (PSTN), and is not offering any "capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing or making available information," it is offering telecommunications and not information services, notwithstanding that it does so in part over an IP network. The FCC therefore suggests that a provider of phone-to-phone IP telephony should be treated as a regulated telecommunications provider.

Further, the FCC has reported that it may regulate facilities-based ISPs who use their raw transmission facilities to serve internal needs for providing Internet services or who lease their facilities to other ISPs. Specifically, the FCC would regulate the actual transmission facilities services and not the Internet services.

The FCC reasons that these entities are providing telecommunications services and should be regulated as are telecommunications common carriers that provide raw telecommunications transmission facilities to ISPs. Currently unregulated carriers such as Level 3, Williams Communications, and Qwest could be subject to regulation under this policy.

ISPs ARE RIGHT IN THE MIDDLE

The FCC has suggested it will carefully reevaluate the regulatory status of ISPs that provide these services in upcoming rulemaking proceedings. Adoption of rules based on these policies would likely subject ISPs providing these services to federal and/or common carrier regulation, including registration and/or certification requirements, payment of contributions into the Universal Service Fund, payment of access charges to local exchange carriers, tariff filing requirements, and various other regulatory requirements.

The FCC's attempt to separate out these two Internet services for regulation makes no sense from a regulatory and policy standpoint. The Internet industry is extremely competitive, with substantial new players (and new technologies) emerging into the marketplace every day. These entities are forcing innovation in telecommunications and pushing competition in all segments of the industry.

The fastest way to ruin this innovation and competition is for the FCC to put a regulatory throttle on the Internet industry. The FCC must keep its hands off this new industry.

Although the FCC has had a "hands-off" policy to date with respect to the Internet, the agency continues to experience tremendous pressure from multiple sectors of the regulated telecommunications industry and Congress to put more controls on ISPs competing with traditional carriers. The FCC's recent policy suggestions contained in the Report appear to be its first attempt to open the door to regulation of the Internet. Notwithstanding, adoption of rules treating these services as telecommunications services will likely lay the foundation for further regulation of Internet services and providers.

ISPs must elevate their awareness of these issues and participate in the process to ensure that any new policies are fair and non-discriminatory. ISPs can no longer ignore the activities at the FCC and on Capitol Hill involving the regulatory status of the Internet. ◆

EYE on E-MAIL by Eric Allman

WORDS, WORDS, WORDS

In this, the first of a series of columns on the topic of electronic mail on the Internet, I'm going to offer you a bit of history, some definitions, and a brief introduction to the protocols used to transfer mail on the Internet.

Eric Allman is the chief technical Officer at Sendmail, Inc., a leading e-mail server company based in Emeryville, California. He is also the author of the **.i sendmail MTA**, the **\-me macros**, **syslog**, **trek**, and a variety of other fun programs. He can be reached at `eric@sendmail.com`.

This may be a bit too simple for some of you, but it's important to make sure we are all speaking the same language before I jump into the more interesting stuff in future columns.

I'm also going to give an example of tracking a piece of email, in this case my personal favorite: spam.

We'll talk about spam in more detail in the future.

Electronic mail on the Internet is sent using a protocol called Simple Mail Transport Protocol (SMTP). This protocol evolved out of the mail transport protocol used in the ARPAnet, which used the old Network Control Protocol (NCP) instead of the newer Internet Protocol (IP). In the NCP days, mail was sent as part of the File Transfer Protocol (FTP), so it should come as no surprise that SMTP and FTP bear a lot of resemblance even to this day.

For example, both are text line oriented protocols, both return status lines that start with a three-digit number, and both deal with what is essentially bulk transfer of data that has no direct real time constraints.

A program that exchanges mail using SMTP is called a Mail Transfer (or Transport) Agent (MTA). End users don't interact with the MTA directly; instead, they use something called a Mail User Agent (MUA) to give them a (hopefully) friendly view of the system. Eudora, Pine, and exmh are all examples of MUAs.

The basic idea of SMTP is simple: a sender (client) exchanges some messages with a receiver (server) saying who the mail is from, who the mail should be delivered to, and the content of that mail. The information about who the mail is from and who it is to is called the *envelope*. The content of the mail is further structured into a *header* and a *body*. In theory, the MUA never looks at the envelope and the MTA never looks at the message content, but for reasons that will become clear this is a rule that gets violated on a pretty regular basis.

The envelope doesn't necessarily have any connection to the header. For example, it is perfectly reasonable for the header to read:

```
From: A Clever User <clever@smart.com>
To: mailinglist@server.net
```

but the envelope to have something like:

```
MAIL From:<mailinglist-request@server.net>
RCPT To:<joebob@university.edu>
```

This happens for several reasons, but the most common is mailing lists. Let's look at the sender (`From:`) and recipient (`To:`) addresses separately.

The `From:` address in the header tells who sent the message (or more precisely, on who's behalf the message is being sent; for example, I might send a message on behalf of a co-worker, causing the `From:` header to have his or her name and the `Sender:` header to have my name).

The header `From:` address is the address to which the recipient should reply. Think of it as the equivalent of the address on a letterhead in a piece of physical mail. In contrast, the envelope sender is the address to which errors should be sent. If I send mail to a mailing list, and someone subscribed to that list had their account revoked, it isn't useful for me to get a message telling me about that failure, because I don't care and I can't do anything about it. Instead, the maintainer of the mailing list should get those bounces, since that person might have some chance of doing something about the problem. On physical mail, this would be the return address on the outside of the envelope.

The `To:` addresses in the header (as well as the `Cc:` addresses) tell to whom the mail was originally addressed. The recipient addresses in the envelope tell to whom it of the message should be sent. They can differ for several reasons. For example, in our mailing list example above, message processing occurs in two phases: first, the message is sent from the original sender to the machine that explodes the mailing list.

Second, copies of the message are sent to everyone on that list. In this second phase, the header still has the name of the mailing list, but the envelope has the addresses of each member of the list. MTAs should never read the header to determine recipients since this could cause loops. (An exception occurs when the message is first submitted for transmission, i.e., when the user clicks the *send* button.) A similar transformation occurs if a user has their email forwarded to a different address; the header is unchanged, but the envelope is transformed under control of the user's forward file.

So let's go back to SMTP for a moment and consider the implications of some of the above. As you have seen, there is really no way to correlate the header to the envelope; under perfectly legitimate circumstances they can completely differ from each other. When designed, Internet mail was intended to facilitate communication, so no authentication was built into the protocol.

As generations of undergraduates have discovered, it is trivial to *telnet* to the SMTP port and forge a message. This is not a bug in the MTA, but rather a *feature* (opinions vary) of the SMTP protocol itself. In short, in the absence of some other authentication (such as a cryptographic signature) you can never believe email. And this is a blessing for spammers, who routinely forge their headers and even the envelope sender.

The situation isn't quite as bleak as it might seem. The `Received:` headers give you a fair amount of information (and, by the way, are an example of where the distinction between header and envelope breaks down; arguably `Received:` headers *should* be in the envelope, but they go into the header for reasons of practicum). In particular, if you trace them backwards, starting at the machine on which you received your mail (which presumably you trust), each `Received:` *should* show the name and IP address of the machine from which the message was received. This information is taken from the network layer (essentially, the connection information in the network connection maintained by the kernel), so in the absence of some pretty clever address spoofing this information can be trusted.

For example, consider the header:

```
Return-path: <net40@www.domain-serv.com>
Received: from bilbo.reference.com (bilbo.reference.com [209.157.35.10])
    by knecht.Sendmail.ORG (8.9.0.Beta6/8.9.0.Beta6) with ESMTP id WAA20891
    for <eric@Sendmail.ORG>; Mon, 27 Apr 1998 22:23:05 -0700 (PDT)
Received: from outlook.domain-serv.com (host@[207.113.176.111])
    by bilbo.reference.com (8.8.8/8.8.4) with ESMTP
    id WAA26446 for <eric@reference.com>; Mon, 27 Apr 1998 22:23:03 -0700(PDT)
Received: (from host@localhost)
    by outlook.domain-serv.com (8.8.8/8.8.8) id WAA32072;
    Mon, 27 Apr 1998 22:18:39 -0700
Message-id: <199804280518.WAA32072@outlook.domain-serv.com>
From: net40@www.domain-serv.com
Date: Mon, 27 Apr 1998 22:18:39 -0700
Subject: Don't Risk Losing That Great Domain Name!
To: Internet_Presence@natmed.com
```

The first line, the `Return-Path:` header, is inserted when the mail is delivered to your final mailbox; it contains the envelope sender information (another blurring of the distinction between envelope and header). The next three headers (the `Received:` lines) are added as the message passes through systems during processing; they are your best bet for tracking a message. The first `Received:` line is inserted last, by my machine (`knecht.Sendmail.ORG`); since I trust this machine, I can be reasonably certain that the message really was received from `bilbo.reference.com`.

As it turns out, I know the people who run bilbo, and I'm reasonably certain that their machine hasn't been cracked, so I also believe the next `Received:` line -— this message probably came from `outlook.domain-serv.com`.

This is a rare case where a spam message has an envelope sender, a `From:` header, a `Message-Id:` header, and a set of `Received:` lines that all match; usually spammers forge all of them that they can. The only headers that they can't reliably smash are the `Received:` headers added after the message leaves their sphere of control.

You may notice that in some cases the host name in the `From:` of the `Received:` line has been duplicated. This is not required by the standards, but some MTAs such as *sendmail* include this information. The first part (that precedes the part in parentheses) is what the client claims to be (part of the SMTP session initialization involved the two parties exchanging their host names); this can easily be forged.

The second part (in parentheses) is what the receiving server extracted from the network layer, and is usually more reliable. It always includes an IP address, which is what is actually available from the network layer. The host name, if available, is derived from doing a PTR (address to name) lookup using the Domain Name System (DNS). Some hosts do not have PTR records. For example, 207.113.176.111 does not have a PTR record pointing to `outlook.domain-serv.com` (although `outlook.domain-serv.com` does resolve using A records to 207.113.176.111).

You'll also notice that some of the `Received:` lines have what seem to be a user part (that is, in a user@host syntax). Some MTAs will add information to the `Received:` headers that is gleaned from the IDENT protocol.

This protocol is a way for a server to ask a client the name of the user who is connecting to the server on a given port. For example, in the example above, it would appear that a user named "host" was executing the mailer on 207.113.176.111.

But what this *really* means is that the *sendmail* on bilbo asked the IDENT server on 207.113.176.111 who was running the MTA on that machine and the IDENT server responded that it was a user named "host" — this may or not mean anything.

None the less, IDENT is useful in environments where machines are shared and the system administrator has reasonable confidence that the machine is secure.

In particular, it can be very useful to trace back email from those undergraduates who have just discovered that they can `telnet` to the SMTP port and send mail as anyone they want.

Careful examination of `Received:` lines can give you important clues when you need to track mail. They can also help you find other problems, such as clogged queues. But that's a topic for another time. ◆

Notes From The Underground

by Wallace Wang

DECOMPILING SOURCE CODE

The most precious treasure of any software company is the source code to their software. By keeping their source code secret, companies can protect their trade secrets and continue selling their programs to the public. The moment others can study, copy, and modify the source code, the company that created the source code loses their monopoly.

While Netscape has released the source code to its browser and other programmers freely share their source code for Linux applications, don't expect people to hand you their source code voluntarily. After all, if you could study the source code to another company's program, you could see their secrets and create a competing program to put them out of business.

Since you can't always steal or buy source code, do the next best thing and decompile it by taking the **EXE** executable file and converting it back into its original source code. By studying the source code, you can see how someone wrote the original program.

Of course, decompiling has its limitations. You can't take a program, originally written in Pascal, and decompile it into C++ or FORTRAN source code. From a legal standpoint, decompiling can also be considered illegal. Computer programs are protected by copyright law and copyright protects the expression of an idea. Hence, source code falls under the category of intellectual property of the original developer. By decompiling software, you could be violating copyright law. The next time you read a program's licensing agreement, check the fine print, which explicitly states that no one has no right to decompile, disassemble, or reverse engineer the program.

To learn more about the controversy surrounding decompilation and find various software decompilation tools available, visit The Decompilation Page (`www.csee.uq.edu.au/csm/decompilation`).

MS-DOS DECOMPILERS

Despite these technical and legal restrictions, other programmers continually develop and distribute tools for decompiling almost any type of program. To successfully decompile any executable file, you first need to know the language the original source code was written in.

If you have an executable file that runs on MS-DOS, you have two choices, the Basic Decompiler (`http://members.aol.com/mspring810/private/index.htm`), which decompiles QuickBasic programs, and the dcc decompiler (`www.cs.uq.edu.au/groups/csm/dcc.html`), which decompiles C programs. Since many MS-DOS programs were written in assembly language, you could also use a disassembler, such as the Interactive DisAssembler Professional (`www.ccso.com`), to reveal the original assembly language source code for you to study. (This particular disassembler can not only disassemble MS-DOS programs but Windows and OS/2 programs too.)

CLIPPER AND FOXPRO DECOMPILERS

If someone wrote an MS-DOS program using C source code, you have no idea whether that person used Turbo C, Microsoft C, or any other variety of C compilers that once existed on the market. As a result, decompiling a C program will likely contain errors or omissions that may take an experienced programmer to recognize.

To successfully decompile a program, you should know the exact compiler somebody used to create the original program. Since many people have used dBASE-type languages to create programs, other people have created decompilers for these programs as well.

For example, if you have a program originally written in FoxPro, you can use a decompiler called *ReFox* (`www.xitech-europe.co.uk`) to peek at the source code. If you have a program that was compiled using Clipper, use a decompiler called *Valkyrie* (`www.terminal-impact.com`) to get at the source code.

VISUAL BASIC DECOMPILERS

Of all the programming languages available, Visual Basic programs are the easiest to decompile. Not only do Visual Basic programs reveal their existence through the use of run-time files such as **VBRUN300.DLL** (for Visual Basic 3.0) or **MSVBVM50.DLL** (for Visual Basic 5.0), but Visual Basic compiles source code into pseudo-code. When you run a Visual Basic program, it uses its run-time file to actually run the instructions stored in the **EXE** pseudo-code file.

Because Visual Basic does not compile source code into a true **EXE** executable file but as pseudo-code instead, a Visual Basic decompiler can pick apart this pseudo-code and recreate source code nearly identical to the original Visual Basic source code. Since many online service harassment programs (such as AOHell)

Wallace Wang is the author of ***CompuServe For Dummies***, ***Visual Basic For Dummies***, ***More Visual Basic For Dummies***, ***Microsoft Office 97 For Dummies***, *and* ***More Microsoft Office 97 For Dummies***.

When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at `70334.3672@compuserve.com`, `bothekat@aol.com`, `bo_the_cat@msn.com`, or `bothecat@prodigy.net`

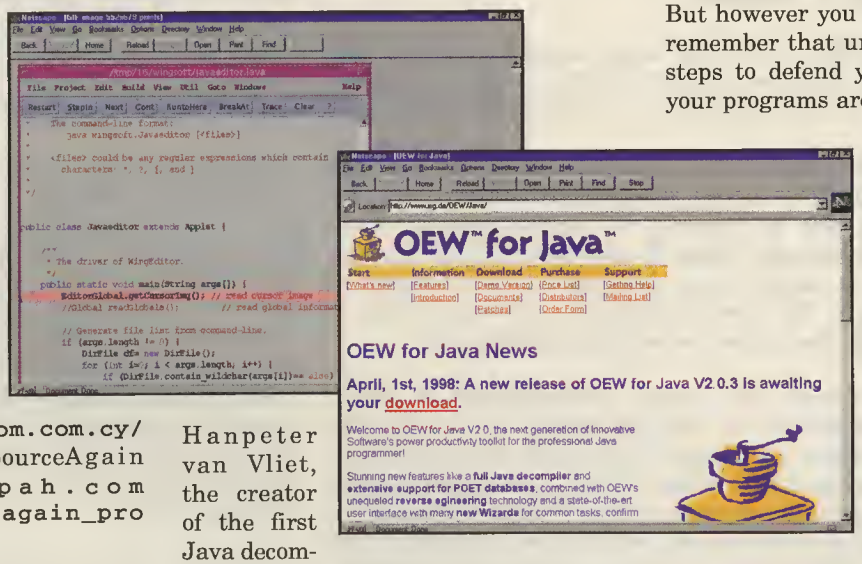
and e-mail spamming programs (such as FloodGate) are written in Visual Basic, you can decompile these programs to see how they work and create your own programs based on the ideas you get from studying this decompiled source code. For an example of a Visual Basic decompiler, visit DoDi's VBDecompiler (`http://members.aol.com/vbdis/index.htm`).

PROTECT YOUR OWN SOURCE CODE

Since many shareware and commercial software has been developed in Visual Basic, you might be horrified at the thought that anyone can decompile your source code and steal your program. If you want to protect your Visual Basic source code from decompilers, download a decompiler scrambler that prevents decompilers from working. Two such programs are the Visual Basic decompiler defeater (`www.shadow.net/~npi/dcompile.htm`) and VB Decompiler Shield (`http://ourworld.compuserve.com/homepages/InnovativeTech/main.htm`).

JAVA DECOMPILERS

Like Visual Basic, Java also does not create true **EXE** executable files. Instead, Java compiles Java source code into binary class files, which can then be dissected by a Java decompiler to faithfully recreate the original Java source code. Since Java has become such a hot programming language lately, the subject of decompiling Java programs has set off a lively debate.



Several freeware, shareware, and commercial Java decompilers have appeared recently including Mocha (`www.brouhaha.com/~eric/computers/mocha.html`), OEW for Java (`www.isg.de/OEW/Java`), WingDis (`www.wingsoft.com/wing dis.shtml`), Jad (`http://web.unicom.com.cy/~kpd/jad.html`), and SourceAgain (`http://www.ahpah.com/sourceagain/sourceagain_professional.html`).

Like Visual Basic, people have not only developed decompilers for Java but also decompiler defensive programs, called obfuscators. In fact, Borland International provides an obfuscator in their JBuilder program and it's likely that other Java compilers will soon follow their lead. (Borland is also trying to prevent the distribution of Mocha and other Java decompilers.)

Hanpeter van Vliet, the creator of the first Java decompiler, Mocha, has even written a paper defending the practice of decompiling programs. You can read his paper at `http://java.motiv.co.uk/mocha.htm`.

TO DECOMPILE OR NOT?

Decompilation can be used to steal proprietary software secrets, to recover lost source code, or to study the algorithms of a freeware or public domain program. But however you use a decompiler, just remember that unless you take specific steps to defend your own source code, your programs are vulnerable to decompilation by others.

So the next time you write the next killer application, make sure you protect your program from decompilation using an obfuscator as well. Or for added assurance that no one will decompile your program, write a program that doesn't work or that nobody cares about anyway. If you meet either of these two criteria, congratulations! You can now get a job writing programs for the government. ◆

ISP TECH TALK by Avi Freedman

DNS SERVERS AND PROVIDER-INDEPENDENT ADDRESS SPACE

Avi Freedman started Net Access, the Philadelphia area's original ISP, in October 1992. Net Access is currently a regional ISP, with and more than 200 downstream Internet providers and dedicated-line customers, and thousands of dial-up and web hosting customers. Net Access services Boston, New York, Philadelphia, Baltimore, Washington, DC, Chicago, and San Francisco.

Avi has been very active on the inet-access mailing list and is a vocal proponent of the continued viability of startup and existing ISPs. He is also on the ISP/C Board as Director at Large and the ARIN Advisory Council. ISPs can join inet-access by e-mail to `inet-access-request@earth.com` with SUBSCRIBE in the subject. Avi can also be reached at `freedman@netaxs.com` or `netxs.co`.

First, A Correction

The price of the Highwind (`www.highwind.com`) news server is not $5,000, as printed in May, but $500. I wouldn't be so excited if it were $5,000, but at $500 it represents a breakthrough and brings the ability to run an excellent news reading server to every ISP who can afford the bandwidth to pull a full news feed.

And if you want to save bandwidth and take a full news feed at no recurring cost, see `www.isp-sat.com`. (disclaimer—my company runs isp-sat.)

A TIP ON SETTING UP YOUR DNS SERVERS

As a kick-in to the next section, I'll pass on a tip that could prove very useful to you, especially if you're just getting started. The biggest problem with switching providers and having to renumber is getting your dial-up customers to change their parameters.

Assuming all of your dial-up customers get dynamically-assigned IP addresses, and if you've done a good job and have told your customers to use `smtp.myisp.net`; `news.myisp.net`; and `pop3.myisp.net`, all you have to do to renumber your dial-up customers is to tell them your new primary and secondary IP addresses.

THE TIP — I advise using addresses inside of the Class A address space 10.0.0.0, as this is the block most widely recognized as unroutable on the Internet.

What's need about it? In addition to having "real" IPs on your DNS servers, alias each DNS server to a separate "fake" or "reserved" IP, and give these IPs out to your customers. Since IP addresses that are reserved are unroutable on the Internet, and are designed to be used for internal networks, you never need to change them once you tell them to customers.

For example, `ns1.myisp.net` would have 10.10.40.1 as a secondary IP, and `ns2.myisp.net` would have 10.254.254.1. By using IPs that are "far away" from each other inside of the 10.0.0.0 Class A, you run less risk of having customers using 10.0.0.0 address space for their own purposes and thus being unable to see your DNS servers. (If you had to, you could always tell them the "real" IPs of the servers, but you'd then have to tell them the new numbers if you have to renumber into new IP space.)

Another problem with this solution is that your customers won't be able to use the DNS settings you give them when roaming to different cities. With proper customer education, this is not a big problem because they already have to change SMTP server settings if they roam (unless you're running open SMTP relays, which is a major no-no).

NOTE: If you don't understand that last paragraph, see `www.vix.com/maps` IMMEDIATELY! Unless you restrict access to your SMTP server to authorized uses and to people wishing to deliver mail to domains which you are handling, you will most assuredly become a spam relay and wind up with thousands of complain messages in the best case, and blackholing from some sections of the Internet in the worst case (`www.vix.com/rbl`).

A NOTE ABOUT IP ADDRESS SPACE

As I mentioned in the May 1998 column, the ARIN has recently made it much easier to get PI ("Provider-Independent") IP address space. Once you've efficiently utilized 8 blocks of 256 IPs (also called "slash 24"s; "/24"s; and "Class C-sized block"s), you can get an allocation of 16 /24s and announce it to the world as 32 /24s (also called a /19).

Why is this important? Once you get PI space you'll have a reasonable assurance of never have to renumber again. Why is the fact that you can now get a /19 more easily important? Because unless you do, certain parts of the Internet won't "hear your route" (see the BGP columns in Spring of 1997).

Now, for the note — unless you have PI space you DO NOT HAVE PI SPACE!

The opposite of PI space is provider-assigned space. If you have IP space from your upstream providers, you DO NOT OWN THE SPACE. Just because you can multi-home with provider-assigned space (i.e. you can have a 2nd provider announce some /24s or other routes from IP space assigned by your 1st provider) does not mean that you can continue this if you stop buying connectivity from the 1st provider. Any ISP/NSP who does this will be censured in the global routing community.

So, you cannot get provider-assigned space announced if you leave that provider, unless you have a specific contractual assurance from that provider. For example, (blatant plug) Net Access allows our customers 90 days to renumber if they leave and are paid-up. Even so, there are some problems with this. 207.8.128.0/17 (a block of 128 contiguous /24s) is one of the ARIN/

Internet-assigned blocks of IP space (or "aggregates") assigned to Net Access. Let's say that `ex-customer.net` was assigned 207.8.132 .0/23 (a block of two contiguous /24s). Now they leave and go to `other isp.net`.

Since some networks don't listen to "small routes" like 207.8.132.0/23, those networks will only hear 207.8.128.0/17 and thus will send all packets to `netaxs.net`. If we're nice, we'll send those packets on to `otherisp.net`, which will then deliver them to `ex-customer.net`. The problem with this, of course, is that we are getting NO MONEY for providing partial Internet connectivity for our ex-customer!

So again, to repeat—unless you have PI space you DO NOT HAVE PI SPACE!

Now, what can `netaxs.net` do if ex-customer leaves and continue announcing routes? Well, immediately, we could shut off reverse DNS for your blocks. This means that your dial-up users will see slow connectivity and won't be able to connect to some paranoid servers on the Net.

Then, we could announce 207.8.132 .0/23 as 207.8.132.0/24 and 207.8.133 .0/24, which will "beat" the 207.8.132 .0/23 announcement because they're more specific advertisements. Of course, ex-customer could start advertising things as two /24s, but then there's a big war and no one wins. `netaxs.net` can't reassign the IP space, but ex-customer doesn't have global reachability from it.

So what's the upshot?

(1) Plan on renumbering within a week or two if you leave a provider, even if they royally screwed you in some way.

(2) Get in writing that you can have a migration period of 30-90 days if you leave a provider.

Next month we'll talk about different kinds of leased lines (point to point, Frame Relay, and SMDS). ◆

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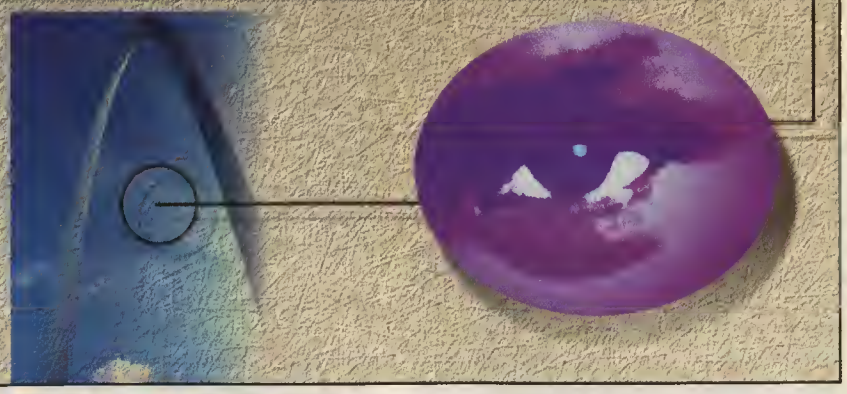

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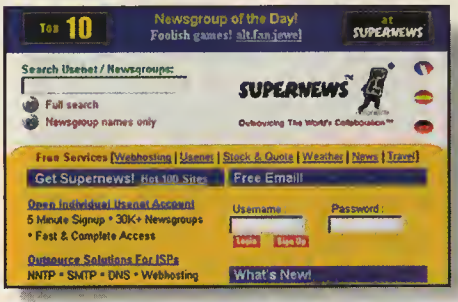

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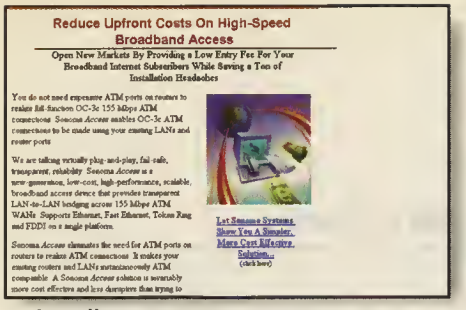

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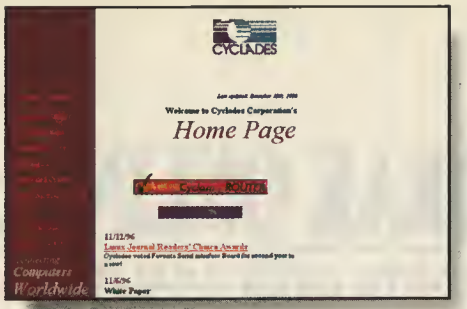

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http://www.ale.org/showcase/

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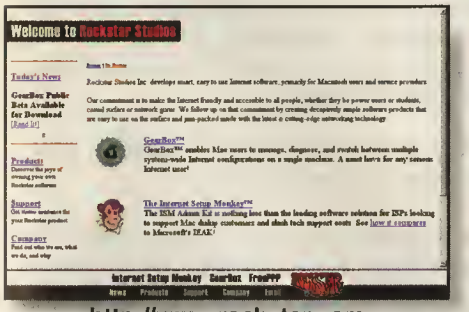

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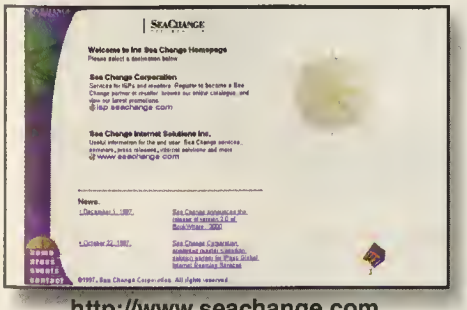

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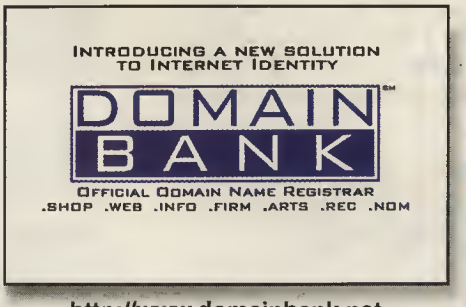

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DVORAK ONLINE by John C. Dvorak

GOING NUTS OVER ANALOGIES

We can't seem to get Microsoft out of the news. The cynics among us consider the entire DOJ battle a publicity stunt designed to increase awareness of Windows 98, a simple upgrade being sold for $100. Ten million copies are expected to be sold to the users, resulting in a billion dollars in sales right out of the chute. This is not trivial.

Meanwhile, Microsoft does have its tit in a wringer with the government, but when you can sell a billion dollars worth of something instantly, who cares? So the company has its PR minions working overtime on gambits.

My favorite is the analogy ploy which is cropping up all over the place. This is where someone dreams up a weird analogy and everyone parrots it over and over. It began with the "It's like making Coke give away three cans of Pepsi with every six-pack." This was referring to the DOJ suggestion that Netscape Navigator be included on the Windows 98 distribution disk if Microsoft persisted in bundling its browser.

Sometimes the analogies are even extended. Where will it lead? Here is my interview with Macrosoft's CEO Gil Bates regarding the situation with the government.

Dvorak: First let me say hello, and thanks for the interview. You're a hard guy to get hold of.

Bates: It's like Pepsi trying to get hold of the Coke formula.

Dvorak: Maybe harder! So what's happening with the DOJ?

Bates: They want us to distribute the competition's product. It's like Coke giving away three Pepsi's with each six pack. Or like Burger King selling Big Macs. Or like a Ford Dealer selling a Chevy. Or like ABC having to carry NBC programming. Or like Siskel having to wear Ebert's clothes. Or like...

Dvorak: I get it, I get it. The DOJ document says that this has to do more with fixing past violations on your part. Correcting mistakes.

Bates: What mistakes? This is like Coke being forced to re-introduce New Coke or Burger King being made to sell a crab sandwich or Ford having to bring out the Edsel.

Dvorak: So what is your rationale for bundling a browser with Windows?

Bates: That's like asking why does Coke use sugar in its cola or why Burger King puts ketchup in its hamburger or why Ford has a steering wheel in its car or why NBC promoted Seinfeld.

Dvorak: But some people argue that the browser is an application and not part of the operating system.

Bates: That's like saying the Coke in the can doesn't need the can or that the Burger King burger doesn't need the bun, or the McDonalds' Happy Meal doesn't need the toy or the Ford engine doesn't need oil.

Dvorak: Well, at a soda fountain the Coke doesn't need the can.

Bates: But then it's not a can of Coke, is it?

Dvorak: But it tastes the same.

Bates: That's like saying a Diet Coke tastes the same as a Coke or a Whopper tastes the same as a Whopper, Jr. or that a red Mustang looks the same as a green Mustang.

Dvorak: Uh, no it's not. The soda fountain soda tastes the same as a can of Coke.

Bates: No it doesn't. It's theoretically impossible to make a Coke at a soda fountain taste exactly the same as a can of Coke. The mixing of the soda and syrup is less precise. There are differences. It's like saying a McDonalds' hamburger in Tokyo tastes exactly the same as a McDonalds' hamburger in Chicago. The meat source is different. There has to be a small difference in flavor.

Dvorak: Well that's like saying a McDonalds' hamburger on Tuesday is different from one on Wednesday then. The meat is different.

Bates: Correct. But that's like saying no two McDonalds' hamburgers are alike because of the placement of the pickle.

Dvorak: Where were we?

Bates: YOU were telling me how innovative Windows 98 is...

Dvorak: I was? Sorry I forget.

Bates: You forgot? That's like Coke forgetting Atlanta or McDonalds forgetting Burger King, or.....

In addition to his weekly syndicated radio call-in show, *Software/Hardtalk*, syndicated newspaper columns, magazine writing for ***MacUser***, ***PC Computing***, ***DEC Professional***, ***Information Technology***, and his featured "*Inside Track*" column in ***PC Magazine***, Dvorak is the author of several best-selling books, including ***Dvorak's Inside Track to DOS & PC Performance***, ***Dvorak's Guide to PC Telecommunications***, and ***Dvorak's Inside Track to the Mac***. He maintains a web site at `www.dvorak.org`. John can be reached at `dvorak@dvorak.org`

I think you get the idea. Hopefully, we won't have to endure more of this kind of thing in the future. It's nauseating. I think what annoys me the most is the free publicity for the brand name products. The real ploy here is to associate Microsoft with the major consumer brands by citing them in analogies. Microsoft, McDonalds, Burger King, Pepsi and Coke were all used as examples by Microsoft in their moaning about the DOJ requests. And you know the guys working at Microsoft were giving each other high-fives for dreaming up the Coke/Pepsi analogy.

Doug Adams, the fiction-writer, was on my ZDTV panel discussion and came up with the only analogy to top Microsoft's and which better explained the DOJ perspective. This wasn't like Coke having to give away three cans of Pepsi with each six-pack. It was like a monopolistic liquor store owned by Coke being forced to carry Pepsi. But even that analogy isn't perfect.

Analogies are mostly used to help us understand a situation in some symbolic way. When they are exaggerated and funny, such as the Coke/Pepsi analogy employed by Microsoft, we tend to not only remember them better but we replace the real issues with the analogy. We can't get it out of our minds, even if it is completely wrong. If there is a Coke/Pepsi analogy it's nothing like giving three cans away free. It's no different than when you go to the store now and buy Coke and get a free coupon for a deal on Pepsi. That's as far as the analogy works. But now I'm doing the analogy thing!

The fact is, there is no cost to Microsoft to put the Netscape browser on a distribution disk if that's what it takes to get the government off its back. Microsoft whines that this is not their product, not their code. They don't want to take a bunch of support calls or get blamed if it crashes. This is nonsense.

Microsoft could play this with the opposite spin too. It could heavily publicize the Netscape support lines to the point where Netscape would be inundated by calls. This won't happen because Microsoft simply will not be told what to do. It's a free country, after all. It's as if Microsoft is like McDonalds where it won't change. It should be like Burger King where it says, "Have it your way."◆

Dvorak's Recipe Nook

BUYING RESTAURANT *Wine*

We haven't talked about wine in this column, so I've decided to publish a list I've developed for some friends who need a sure-fire wine to choose at a restaurant. You can find this listing updated every so often at **www.dvorak.org/wines.html**.

Since there are few wineries in the world that make killer wine in each and every vintage, this list is not as hard to develop as it might seem. Although there are always the unknown sleepers that make great wine over and over. I've divided the list into three categories: low-budget, moderate and unlimited/ expensive.

The unlimited group will be the most spotty since there are numerous over-priced, but always excellent, wines that are rarely encountered, so there is no reason to include them. I've tried to make this list as compact as possible specializing on typical wines you'd find on a restaurant wine list. This is so that you can cut this list out and use it as a cheat sheet when necessary. I've discussed this list with various professionals to fine-tune it. This is as simple as I can make it, thus most of the wines are Californian (except the high-end wines). I have included no German wines and minimized other areas. Wines marked with an asterisk (*) are trendy or cool to order.

LOW BUDGET

This is a difficult category since restaurants like to make profits from their wine list and hate to have inexpensive wines on the list. But many do just in case a penny-pincher shows up. There are also situations where the wine list is so ridiculously expensive that a few reasonably priced wines need to be on it, lest some customers walk out! These wines are reliable and consistent. For the reds I'd stick to Cabernet Sauvignon and Merlot. For the whites I'd stick with Chardonnay. Unless otherwise noted in the list, that is.

Good Inexpensive and consistent Brands: Red & Whites

Kendall-Jacksan
Fetzer
Clas du Bais
Joseph Phelps
Beringer
Silverado
Robert Mondavi

MODERATE PRICED

The moderate priced wines are a cut above, but not necessarily by much. Beringer, for example, can be in either list with some of its super premium wines, as can Phelps and Mondavi. In this list I've introduced some highly reliable Italian wineries making a broad range of products. Some of the wines such as the Kistler Estate Chardonnay might be considered for the "Expensive" list.

Moderate Priced Brands: Red & White

Caymus
*Leanetti (Washington)**
Woodward Canyan (Washingtan)
Ferrari-Carana
St. Francis
Ridge
Far Niente
Jade Mauntain
Banfi (Italy)
Antinori (Italy)
Avignonesi (Italy)

Specific Wines of Quality in the moderate price range

*Kistler Chardannay**
Sarah's Vineyard Chardannay
*Zaca Mesa Rausanne**
Viader Red
Damaine Drouhin Pinot Noir
Ponzi Pinat Nair
Chateau Haut-Marbuzet
Chateau Paujeaux
*Ornellaia (Italy)**

EXPENSIVE

The next group can range in price from $75 and up depending on the restaurant and vintage. Some skyrocket to astronomical prices.

Expensive Wines: Reds

Chateau Margaux
Chateau Latour
Chateau Haut-Brian
Chateau Lynch-Bages
Chateau Lagrange
Chateau Pichan-Lalande
Ramanee-Conti (Burgundy)
Penfald's Grange-Hermitage (Australia)
Sassicaia (Italy)
Any reds from Gaja (Italy)
Any Burgundy from Leray
Any Burgundy fram MeaCamuzet
Any Burgundy from Dujac
Any Richebaurg (Burgundy)

A Note for Experts. This list is not inclusive. I'm sorry if your favorite wine isn't on here.◆

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